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DEVELOPMENT & CHARACTER  
OF  
GOTHIC ARCHITECTURE



DEVELOPMENT & CHARACTER  
OF  
GOTHIC ARCHITECTURE

BY  
CHARLES HERBERT MOORE

*SECOND EDITION*  
*REWRITTEN AND ENLARGED*

WITH TEN PLATES IN PHOTOGRAVURE  
AND 242 ILLUSTRATIONS IN THE TEXT

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TO  
CHARLES ELIOT NORTON, Litt.D., LL.D.

Professor of the History of Art, Emeritus  
in Harvard University

WHOSE FRIENDSHIP THROUGH MANY YEARS  
HAS DONE MUCH TO MAKE POSSIBLE  
WHATEVER OF GOOD MAY BE IN IT

I Dedicate this Book





## PREFACE TO THE FIRST EDITION

IN the following attempt to set forth the development and character of Gothic architecture I use the term "Gothic," because it has been established by custom; and because, since it was owing to the infusion of Northern genius that the style was brought into being, it is not an entirely inappropriate term. But I use it in a restricted sense; confining it to that style of the Middle Ages which was the fullest development of new principles, and most distinctly a mediæval product. In thus restricting the term, I am forced to exclude the greater part of what has usually been called Gothic architecture, because of its failure to exhibit those qualities of design and construction which characterize the distinctive style. The general term *pointed architecture* will suffice to include those other classes of monuments which have been hitherto erroneously classed with Gothic. The position to which my study of the subject has led me differs considerably from that which has hitherto been maintained, especially by English writers. In the works of the true Gothic style we have a new structural system carried out with the strictest logic, and with a controlling sense of beauty. They are works of the highest art, in which sound mechanical principles serve as the secure foundation for the exercise of the poetic imagination. It will, doubtless, seem to readers already more or less familiar with the subject an extravagant position that Gothic architecture, as I define it, was never practised elsewhere than in France. Yet from this position I can see no escape.

The French origin of Gothic is, indeed, now pretty generally admitted on the continent of Europe; but the exclusive

claim of the architecture of France, in the Middle Ages, to be called Gothic has not before, so far as I know, been advanced. This being the case, nothing short of a close analysis and comparison of the different pointed styles of Europe could be expected to establish a view so different from that which has commonly prevailed. I have, therefore, been impelled to undertake an examination of the architecture of the twelfth and thirteenth centuries, and I have endeavoured in this essay to illustrate the results of this examination in a clear and intelligible manner, and in such a way that, so far as might be, the monuments should speak for themselves. This examination I have made, for the most part, at first hand, except in regard to the architectures of Germany and Spain, my acquaintance with which is through books and photographs only.

The main conclusions of the book may, I fear, be unwelcome to many English readers who have regarded Gothic architecture as a no less English than continental product. But though, as I believe, the English claim to any share in the original development of Gothic, or to the consideration of the pointed architecture of the Island as properly Gothic at all, must be abandoned, there is yet abundant reason for English satisfaction in English architecture, as one of great nobleness and beauty, whose monuments can hardly be too highly prized or too zealously protected. And if the French monuments are found to be still more admirable, and to be the result of an earlier, a more original, and a more complete development, and even to have furnished the chief inspiration for what is best in England, these facts will, of course, be acknowledged so soon as they are seen to be established.

The idea having widely prevailed that Gothic was an art common to the nations of the North, each country has in turn laid claim to the superiority of its own style. This idea, as I endeavour to show, is incorrect, and has arisen from a lack of discriminating analysis. The peculiarities of pointed design, exhibited by the different countries of Europe,

have hitherto been taken merely as local variations of this supposed common style; and hence it has become usual to speak of French Gothic, of English Gothic, and of German Gothic, as if the various types of pointed architecture in these countries were all equally Gothic. Some writers have, in recent times, gone farther, and have claimed for the countries to which they have respectively belonged the original invention of Gothic. Thus Rickman begins his well-known and valuable essay<sup>1</sup> by saying: "The science of architecture may be considered in its most extended application to comprehend buildings of every kind; but at present we must consider it in one more restricted, according to which architecture may be said to treat of the planning and erection of edifices, which are composed and embellished after two principal modes: (1) the antique, or Grecian and Roman; (2) the English or Gothic." Some German writers have maintained with equal assurance that to German genius is due the origin and development of Gothic art; while the French, though generally manifesting a preference for their own style, have perhaps made no greater claim than either the English or the Germans to its original authorship.

Thus has a true understanding of the arts of the Middle Ages been retarded; and the disesteem with which, in some quarters, since the time of Vasari, the Gothic style has been regarded is not unnatural. While the whole pointed architecture of Europe is taken together it is not strange that it should appear as an art without principles. But so soon as the principles of the true style are understood, and comparison of the architectures of the different countries is made by the light of them, the French origin of Gothic and its exclusive existence in France will be readily discerned.

It has been necessary to devote a considerable portion of the book to detailed descriptions of structural forms and adjustments. These may prove tedious to the unprofessional reader; but I have endeavoured to make them as brief as was

<sup>1</sup> "An Attempt to Discriminate the Styles of Architecture in England."

consistent with thoroughness, and to express myself, as far as possible, in terms that may be generally understood.

The illustrations to the book have been reproduced either on wood or by mechanical process from drawings, the most of which were made on the spot, or from photographs, by myself. For some of the illustrations of sculpture the drawings have been made from photographs by my daughter, and several of the most elaborate illustrations of entire buildings have been drawn from photographs for the engraver by Mr. H. W. Brewer of London, the well-known architectural draughtsman.

I am indebted for help in gathering materials, and in other ways, to the kindness of many persons; but most especially to M. l'Abbé Muller of Senlis, to the Very Reverend William Butler, Dean of Lincoln, to my architect friends, Messrs. A. H. Mackmurdo of London, and W. P. P. Longfellow and C. A. Cummings of Boston, Massachusetts, to my friends, Professor George H. Palmer and Mr. Wm. C. Lane of Cambridge, Massachusetts (the latter of whom has prepared the index), and, above all, to my friend, Professor C. E. Norton of Cambridge, Massachusetts, without whose critical revision I should hardly have wished to publish the book.

CAMBRIDGE, MASS.,

*October, 1889.*

## PREFACE TO THE SECOND EDITION

I HOPE that this new edition of my "Gothic Architecture" will be found to show substantial improvement upon the earlier one. The book has been almost completely rewritten, and much new matter has been added. The wholly new chapter on the "Sources of Gothic" fills a gap which needed filling; and the reconstruction and enlargement of the following chapters will render them, I trust, more interesting as well as more useful.

A considerable time spent in France, in the year 1893, gave me opportunity to examine a large number of early Gothic buildings, some of which I had before known very imperfectly; and some I had not known at all. The most important of these I examined with great thoroughness—making measured drawings of their structural systems; and finding in them many things which seem to throw fresh light on the early formation of the Gothic style. The most important results of these observations are now incorporated in the book.

To elucidate the text adequately it was necessary to prepare many new illustrations; and in order to secure harmony in the general appearance of the pages, the woodcuts of the old edition have been replaced by process blocks made from my own drawings, and from photographs, or by photogravure plates from photographs. Among the wholly new illustrations are a few by my daughter, which are indicated by her initials. The structural drawings and profiles of mouldings are not in all cases made to scale. When my time on the spot was limited, and there seemed no imperative need for accurate measurements, I trusted my eye. In the list of illustrations it

will be found stated whether a given drawing was made to scale, or by eye alone.

To my friend, Professor Norton, I am again indebted for many important suggestions, and a complete revision of the text; but he is in no wise responsible for any of my statements. I have also again had much valuable help from my friend, Mr. W. P. P. Longfellow, and I am indebted to Mr. C. Enlart of Paris for his kindness in furnishing me several important photographs made by himself. By an inexcusable inadvertence I omitted, in the first edition, to acknowledge my obligation to Mr. Wm. Atkinson of Boston for a drawing of the clerestory of Salisbury Cathedral, which he took the pains to make for me on the spot. A reproduction of this drawing reappears in Fig. 119 of the present edition. I am indebted to Mr. Louis Pulsifer for valuable notes and measurements taken for me at Meaux; and to Miss Grace Reed I owe my thanks for the careful manner in which she has prepared the new index, which is modelled on the admirable one made for the former edition by Mr. Wm. C. Lane, now Librarian of Harvard College. To my publishers also my thanks are due, for the liberal spirit in which they have met my wishes in regard to the general make-up of both editions of the book.

CAMBRIDGE, MASS.,

*May, 1899.*

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## CHAPTER I

### PRELIMINARY DEFINITION OF GOTHIC

SINCE the decline of Gothic architecture the ideas which have prevailed respecting it have been for the most part confused and incorrect. Until recently this art has received little serious attention. The very name Gothic originated in a spirit of contempt which has naturally precluded any disposition to study, as it deserves, this splendid manifestation of human genius. The architects and amateurs of the schools of Vignola and Palladio in Italy, where the revival of taste for antique art had led to an abandonment of mediæval forms of design, could not be expected to admire anything so far removed from the spirit of the art which was in fashion during the sixteenth century. The term *maniera Tedesca*, which they applied to such Gothic as they knew (supposing Gothic art to be of German origin, and their own pointed style to be an importation from Germany), was a term of reproach, and the art was regarded by them as barbaric, and without principles, in comparison with their Vitruvian orders. That this distaste for pointed architecture should be felt in Italy was not unnatural, for it was really foreign to the Italian genius and Italian traditions. It had been adopted as a fashion, and the imperfect apprehension of Gothic, manifested in such use as Italian builders made of the pointed arch, shows how little it was suited to their needs. The pointed architecture of Italy is, indeed, fundamentally different from the Gothic of the North. It is impossible for a people possessed of an art which is an outgrowth of their own wants and tastes, and hence proper to them, to adopt and practise rationally another art which has grown out of different needs and predilections. The Greek and Roman types of building were the natural inheritance of the Italians, were suited to their climate, and supplied all the demands alike of convenience and of taste.



On the north and west of the Alps the case was different. Here the traditions of classic art were not, in the same sense, an inheritance. The ancient forms of building had here been an importation, they had never been wholly understood, and they were not well adapted to the conditions of the climate or to the genius of the race. On the other hand, the Gothic style, which was gradually evolved here, was a natural expression of the peculiar artistic temperament, needs, and resources of the people who produced it; and it was thus as well suited to them as the classic styles had been to the people of the South.

Yet here, too, at length, a distaste for Gothic set in, following the more natural Italian reaction, though the change did violence to much that in architecture was proper to the Northern temperament and Northern needs. The conditions which led to this change of taste had their root in the artificial state of society which the whole of Europe, but especially France, had reached by the end of the fifteenth century, — a state of society in which pleasurable indulgence and display of private wealth had become the chief animating motives of an art that found its main expression in sumptuous and luxurious private dwellings and their adornments. In the immediately preceding centuries private dwellings, even those of the rich, had been comparatively unpretentious and plain, while the church edifice, the great centre of social and communal interest, and the product of the joint energy and enthusiasm of all classes, had been enriched by generous expenditure of toil and of public and private treasure; but now it was the dwellings of the rich that chiefly demanded the services of art. The ambition of Charles VIII to rival the magnificence of Italian palatial building marks the early stages of a movement which, gathering force under Francis I and stimulated by the genius of Lescot and De L'Orme, reached its height in the grandiose architecture of the reign of Louis XIV.

The taste for the Neo-classic style thus introduced was long confined to the upper classes. This architecture could not soon become an architecture of the people, and the cities and the church held out long against it. But with the growth of artificial conditions the new fashion at length prevailed, and under the influences that supervened it is not strange that the Gothic style began to be regarded with aversion, and its monu-

ments to be not only despised and neglected, but often shamefully disfigured and sometimes even destroyed.

In England the taste for the pseudo-classic orders, fostered by the genius of such men as Inigo Jones and Wren, was not less hostile to Gothic. Any feeling for mediæval forms which had lingered on through the Elizabethan period was soon effectually quenched. Germany, though not quick to accept the Renaissance style, was also at length conquered by the growing taste for it. Everywhere some form, though often a travesty, of the revived classic art prevailed. Gothic art became everywhere extinct.

Fashion began, however, after a while again to change. In the course of the eighteenth century an antiquarian interest in pointed architecture was awakened in England, and received a considerable stimulus from the zealous but ignorant advocacy of Horace Walpole. The attention of amateurs began to be directed towards existing monuments, and the publication of Carter's volumes<sup>1</sup> with measured drawings, followed before long by the works of Britton and Pugin,<sup>2</sup> created an extensive, though not a discriminating, taste for the long-abandoned pointed style. So indiscriminating, indeed, was this new interest that it long remained unproductive of good results. No just notion of the nature of Gothic was anywhere entertained. That it embodied principles beyond those which were apparent to a superficial view nobody yet imagined. The modifications and transformations which pointed architecture had undergone at different periods of its history were but partially recognized, and their significance was not understood. No correct historical or structural classifications had been made, and attention was, for the most part, directed to the later and least excellent varieties of the style. Before there could be progress towards a truer understanding of mediæval buildings, it was necessary that the different forms which they had assumed should be examined and classified.

<sup>1</sup> John Carter, *The Ancient Architecture of England* (London, 1795-1816, 2 vols., 8vo.); *Collection of Ancient Buildings in England* (London, 1786, 6 vols., 32mo).

<sup>2</sup> John Britton, *Architectural Antiquities of Great Britain* (London, 1805-1826, 5 vols., 4to) and *Cathedral Antiquities of Great Britain* (London, 1814-1832, 6 vols., 4to). Augustus Pugin, *Specimens of Gothic Architecture* (London, 1821-1823, 2 vols., 4to) and *Examples of Gothic Architecture* (London, 1831-1838, 3 vols., 4to).

At length this progress began. In the year 1817 appeared Rickman's first essay—*An Attempt to discriminate the Styles of Architecture in England*. This book did much to clear up the confusion that had prevailed by pointing out that the differences of style which appeared in the English monuments might be broadly divided into three groups belonging, respectively, to three successive periods of construction. Although Rickman's work was naturally imperfect and inadequate, its classifications were mainly correct, and it has served as a substantial basis for all subsequent study of the pointed architecture of England. So good was it, indeed, that the many other treatises which soon after appeared did little more than extend the field by bringing a larger number of buildings into notice. Professors Whewell and Willis, however, ought to be mentioned as learned and able investigators who must always command the respect of students of architecture. Whewell, in his *Notes on German Churches*<sup>1</sup> (pp. 8–9), showed that the pointed arch had been introduced on account of its structural advantages in vaulting, and did much to systematize methods of observation; and Willis, in his *Architecture of the Middle Ages*<sup>2</sup> and in his *Essay on Vaulting*,<sup>3</sup> has given a more thorough analysis of constructive systems than any other English writer, and has rendered acknowledged service to some of the most able writers of the continent. But neither of these authors succeeded in bringing out with clearness the essential principles of Gothic.

In the year 1851 was published Sharpe's *Seven Periods of Church Architecture*,<sup>4</sup> which showed that Rickman's division of styles might be subdivided. But beyond this Sharpe threw little light on the subject, and he did nothing to invalidate the general correctness of Rickman's work. As regards the true nature of Gothic, Sharpe himself, though a writer of much merit, did not possess a true conception. For he says (p. 4), referring to the commonly received distinction between Romanesque and

<sup>1</sup> The Rev. W. Whewell, B.D., *Architectural Notes on German Churches*, etc. Cambridge, 1842.

<sup>2</sup> R. Willis, M.A., F.R.S., *Remarks on the Architecture of the Middle Ages*. Cambridge, 1835.

<sup>3</sup> Published in the *Transactions of the Royal Institute of British Architects*, vol. i. part ii. 1842.

<sup>4</sup> Edmund Sharpe, M.A., *The Seven Periods of English Church Architecture*. London, 1851.

Gothic (which is merely that the one employs the round, and the other the pointed arch), that he has "little hesitation in adopting this primary division as the groundwork" of his system. And in his various other works, excellent as they are in many ways, he everywhere treats the subject of Gothic design as consisting primarily in this and other minor peculiarities. Of the considerable numbers of more recent English writers on Gothic art, few, if any, have contributed towards a more just apprehension of its principles. They generally have understood by Gothic merely a style of building in which pointed arches take the place of round ones, and mouldings and other small members are treated in a peculiar way. Hence, in discussing the evolution of Gothic, English writers, with hardly an exception, confine themselves to a consideration of these subordinate matters. Even Sir Gilbert Scott, who has shown more insight than most others, fails to lay hold of the ruling principles of the art and to exhibit them with clearness. And his son, Mr. G. G. Scott, even describes<sup>1</sup> some of these principles incidentally without emphasizing them as fundamental.

A recent Belgian writer, regarding the subject from the English standpoint, has published a book<sup>2</sup> in which it is maintained that Gothic consists in a purely ornamental transformation of the component members of a building. These members, capitals, bases, mouldings, etc., he examines without special reference to their functional offices and adjustments, and considers that the more they differ in ornamental character from the corresponding members in the preceding styles, the more Gothic they are. For standards of Gothic form he points to those buildings in which such details depart the most widely from Romanesque types, refusing to recognize as Gothic monuments in which the older ornamental elements are retained, or are but slightly modified.

In France the revival of interest in Gothic seems to have derived its impulse in part from an influence transmitted from England. One of the earliest French writers to show an appreciation of the subject was M. de Caumont, whose voluminous writings<sup>3</sup> did much to stimulate interest and research in France.

<sup>1</sup> *History of English Church Architecture*, 1881, p. 141.

<sup>2</sup> Jean-François Colla, *La Filiation Généalogique de toutes les Écoles Gothiques*. Paris, 1882.

<sup>3</sup> A. de Caumont, *Abécédairé d'Archéologie* (3 vols. 8vo. Caen, 1841) and numerous other works.

M. de Caumont, however, equally with the authors already named, misconceived the nature of Gothic art. Thus, in treating of the

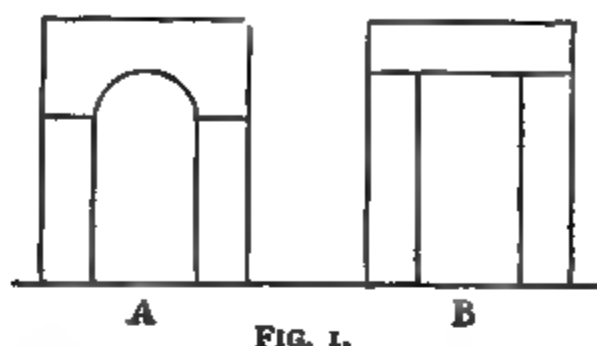


FIG. 1.

transitional works, he says: "La révolution architectonique qui s'opérait durant la période transitionnelle ne consistait pas seulement dans la substitution de l'ogive au plein-cintre, mais aussi, comme nous le démontrerons, dans

l'adoption d'un système nouveau de moulures pour la décoration, et dans l'abandon de la plupart des ornements usités aux XI<sup>e</sup> et XII<sup>e</sup> siècles."<sup>1</sup>

These conceptions of the nature of Gothic art are inadequate. It is only by the investigation of its essential principles that any art can be understood. In architecture the principles of construction are fundamental. The forms of its individual members, apart from their functional offices and relations, are not enough to enable us to apprehend the distinctive characteristics of a style. Round arches instead of straight beams may, for instance, be used to bridge the spaces between the upright supports of a building without producing a result which would constitute a fundamental difference of architectural style. For an arch may be cut out of a single stone, see Fig. 1, A, as was frequently done in the ancient churches of Central Syria.<sup>2</sup> The constructive principle in such cases is, of course, that of the plain lintel just as much as at B in the same figure. Or the arch may be built up with horizontal courses of smaller stones as in the so-called offset arch (Fig. 2),

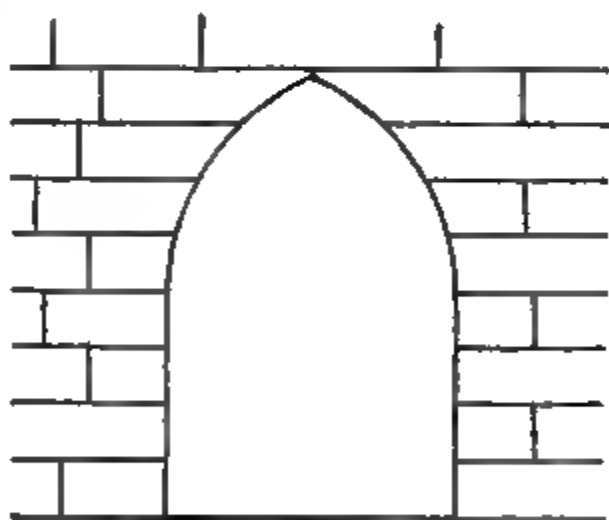


FIG. 2.

<sup>1</sup> *Architecture Religieuse*, p. 387.

<sup>2</sup> Cf. Le Cte. de Vogüé, *L'Architecture civile et religieuse du I<sup>er</sup> au VII<sup>e</sup> Siècle dans la Syrie Centrale*. Paris, 1865-1877. The Basilica of Mondjelia, described on p. 98 of this book, presents such monolithic arches in its nave arcades. At first glance it would seem to be an arched construction. It is not until we scrutinize the jointing of the masonry that the trabeate principle of the structure is understood.

where the constructive principle is still the same as that of the lintel. It is not until the arch is built out of separate stones cut into the shapes of *voussoirs*, causing it to exert lateral thrusts which require to be met by some opposing force, that we have a new constructive principle, the systematic carrying out of which constitutes in architecture a new style.

In a secondary sense it may, indeed, be admissible to speak of differences of style where there are no important differences of constructive principle. Egyptian architecture is in this sense a style different from Greek, the arched Roman is a style different from Romanesque; while the Romanesque itself may be broadly divided into two main styles,—the Eastern and Western,—and, again, the Romanesque of Western Europe may be said to be of one variety in North Italy, of another in Southern Gaul, of another in Normandy and England, and of still another in the Ile-de-France. So of pointed architecture it may be said that there are differences of style, some of which approach more nearly to, and some depart more widely from, that distinctive type which differs fundamentally from all others and is alone properly called Gothic. But it is only in a secondary sense that it is correct to speak thus of styles where no essential structural differences of design appear. Pointed architecture is not necessarily, in a primary sense, a style different from that which is round arched; for pointed arches do not in themselves differ materially in structural principle (though they do in structural adaptability) from round ones. Gothic architecture differs from arched Roman and Romanesque far more fundamentally than by the use of pointed arches in the place of round arches, or by the substitution of one type of ornament for another.

In the midst of such imperfect apprehension as has thus far generally prevailed, and as preliminary to what is to follow, on the nature and origin of Gothic art, it may be well for us to seek at once a clear and unmistakable definition of it. Such a definition is afforded in the monumental work of M. Viollet-le-Duc, the *Dictionnaire Raisonné de l'Architecture Française*. He has therein given a profound and exhaustive illustration of Gothic. He has shown that this architecture consists primarily in a peculiar structural system,—a system which was a gradual evolution out of the arched Roman through the Romanesque,—

and that its distinctive characteristic is that the whole scheme of the building is determined by, and its whole strength is made to reside in, a finely organized and frankly confessed framework rather than in walls. This framework, made up of piers, arches, and buttresses, is freed from every unnecessary encumbrance of wall, and is rendered as light in all its parts as is compatible with strength — the stability of the fabric depending not upon inert massiveness (except in the outermost abutments), but upon a logical adjustment of active parts whose opposing forces neutralize each other and produce a perfect equilibrium. It is a system of balanced thrusts in contradistinction to the ancient system of inert stability. Gothic architecture is such a system carried out in a finely artistic spirit. It is, indeed, much more than this, but it is this primarily and always. So fundamental and far-reaching is this peculiar mode of construction as the distinctive principle of Gothic, that it may be taken as a rule that wherever we find it developed there we have a Gothic building, even though the ornamental elements connected with it may retain many of the Romanesque characteristics; while, on the other hand, wherever a framework maintained on the principle of thrust and counterthrust is wanting, there we have not Gothic, however freely the ornamental elements may differ from those of the Romanesque. <sup>1</sup>M. Viollet-le-Duc has not, indeed, couched his analysis of Gothic in the precise form of a definition; nor has he made such a comparative study of the various types of pointed architecture that were developed in the different countries of Europe during the twelfth and thirteenth centuries as to exhibit the essential difference between the true Gothic and the imperfect imitations of it. But he gives the materials for the definition, and his work suggests the comparison.

The evolution of the Gothic system was gradual, and the final results were unforeseen when the first steps were taken. This will be manifest when we come to examine the variously experimental monuments in which this evolution was working. The first steps were taken early. Indeed, as we shall presently see, the incipient elements of Gothic reach far back into the early Middle Ages. But the earliest development of ribbed vaulting, together with a functional grouping of supports, may be taken as the tangible beginning. This is first met with

in the Lombard churches<sup>1</sup> of Northern Italy, dating from the early part of the eleventh century. The innovations here made, though destined to remain unfruitful in their original locality, were apparently those from which the Romanesque builders of Northern France derived a large share of their early inspiration. In addition to the evidence of this which the monuments themselves furnish, we have record of the migration of Lombard workmen into Gaul even before the eleventh century.<sup>2</sup> The rudimentary principles of organic structure thus transmitted to France were, as we shall presently see, there rapidly developed, so that from St. Ambrogio of Milan to the Cathedral of Amiens a logical series of progressive changes may be traced.

Gothic architecture is thus in no sense an independent, though it is a distinct, style. And hence it is that the finest Gothic buildings retain many of the Romanesque elements, though in a modified and improved form. It is a mistake to suppose that the survival of these elements marks a building as wanting in Gothic character. On the contrary, such elements are proper to Gothic, which is an art not only derived from Romanesque, but which is Romanesque completely developed. Nearly every constructive member of a Gothic building exists in a rudimentary form in a vaulted Romanesque structure.

<sup>1</sup> By Lombard churches it is not necessary to understand churches erected by the Lombard invaders during their actual rule in Italy. The existence, at the present time, of architectural monuments wrought by the hands of men of the original Lombard race seems to have been clearly disproved. The designation Lombard, as applied to the churches of the eleventh century in North Italy, has been therefore objected to. But the style of these churches is unquestionably a result of the foreign influence, though the date of their erection was subsequent to the Lombard occupation. The conclusion reached by the Count di S. Quintino (*Dell' architettura italiana al tempo dei Longobardi*, Brescia, 1829), and others who have treated the subject, that the architecture in question is derived wholly from Roman and Byzantine sources is certainly incorrect; for nowhere in either Roman or Byzantine art are there any precedents for the peculiar features and structural combinations which distinguish such architectural systems as those of St. Ambrogio of Milan and San Michele of Pavia. The fact would seem to be that the remarkable innovations embodied in these monuments originated in an influence derived from the vigorous Northern genius which was strong enough to outlast the period of the actual Lombard domination. After more than two hundred years of ascendancy the influence of such a people could hardly fail to leave an impress that would long endure and, under favouring conditions, lead to the production of forms of art differing widely from those of the original native race.

<sup>2</sup> Cf. Professor Giuseppe Merzario, *I Maestri Comacini*, etc., Milan, 1893, p. 94 et seq.



Even what has been called the osseous system, which distinguishes Gothic, exists there in a potential condition. But, the ultimate possibilities of an organic framework are not worked out in Romanesque art; this framework does not yet frankly and independently exercise its functions.

In order to gain a more correct preliminary idea of Gothic we may here briefly review some of the steps in the process by which the evolution was effected; though for a complete

understanding of it, the fuller treatment which follows will be necessary. I have already alluded to the fact that a new principle was introduced into the art of building when the arch exerting side thrusts was first employed. The most economical and effective way to meet such

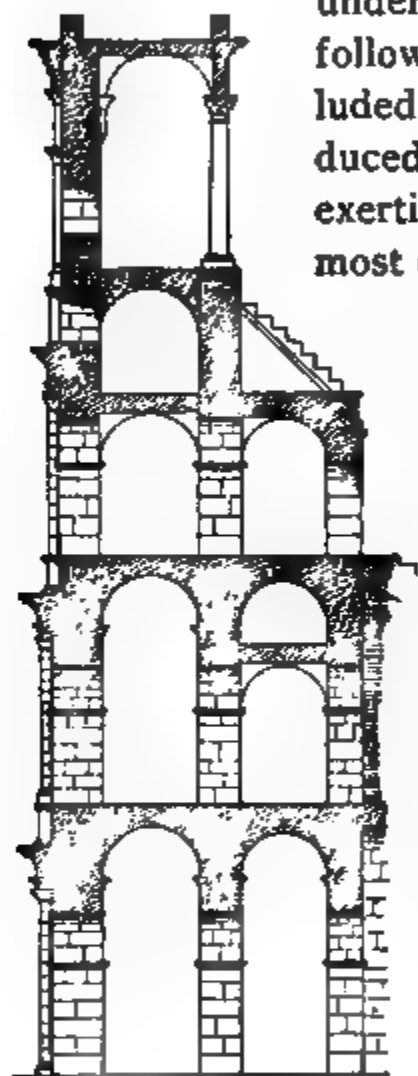


FIG. 3.

thrusts is by some kind of external abutments. But the thrusts of arches may be neutralized in another way, namely, by downward pressure upon the walls or piers against which they operate. Both methods were employed by the Roman and by the Romanesque, as well as by the Gothic builders. In the case of a simple arched opening in a wall, the thrusts are, of course, stayed in both of these ways. The lateral masses of wall act as abutments, and the superincumbent masonry tends to overcome the outward pressures by its weight. Where a space between two parallel walls is roofed over by a barrel vault, the continuous side pressures, which would tend to over-

throw the walls, are, in Roman constructions, met by thickening these walls enough to provide continuous resistance. The walls of vaulted Roman buildings are further strengthened to withstand the thrusts by loading them above the springing of the vaults. In buildings of several stories, such as the Flavian amphitheatre (Fig. 3), the abutting power of the enormously thick walls of the lower stories is augmented by the weight of the walls above. The top story has no vault, and its enclosing wall weights the walls below and contributes to the

stability of the whole structure. By such massive walls, operating in this double way, the pressures of Roman vaults are much more than met, and hence the entire system is practically inert. In the case of intersecting vaults, which were introduced during the latter part of the imperial epoch, — as in the Basilica of Maxentius and Constantine, — the thrusts, instead of being continuous, are concentrated upon the four points from which their arches spring, and are met by walls set across the side aisles, as shown in the plan (Fig. 4). These cross-walls

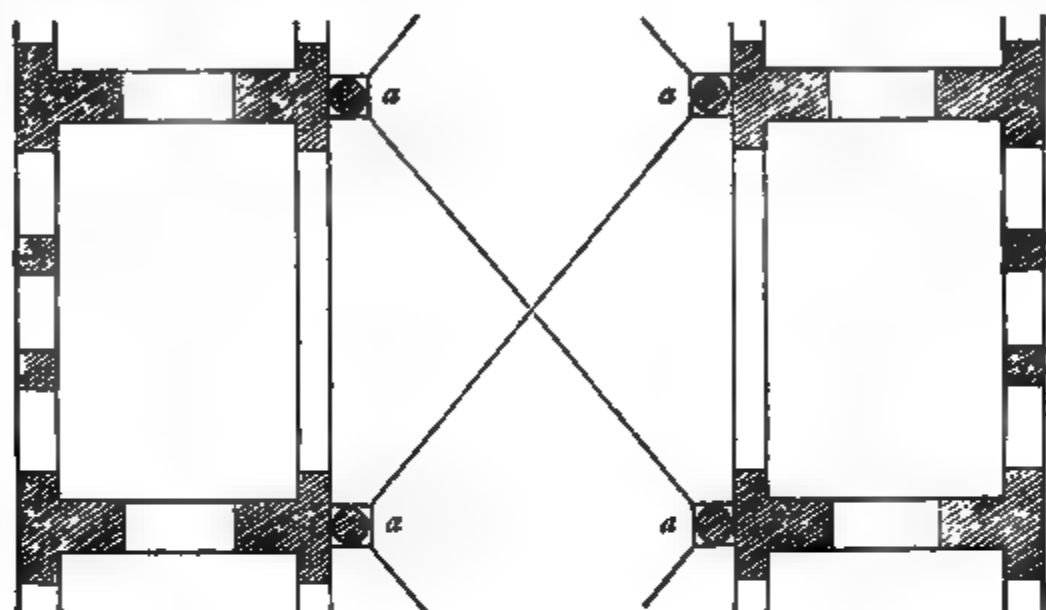


FIG. 4.

are, of course, true buttresses in disguise. The compartments of the aisles are covered by barrel vaults sprung from the cross-walls, and the axes of these vaults being thus perpendicular to the side walls of the building, no thrusts are brought to bear upon these walls, and consequently no external abutments are required. The Romans did not at any time employ the buttress as a distinct architectural member. They contrived their buildings in such a manner that the vault thrusts should be taken either by dividing walls, or by the enclosing walls so thickened as to render them sufficiently resistant by the sheer inertia of their masses.

The Romanesque builders were the first to develop the buttress as a distinct functional member. They began by breaking the outside of the wall with shallow pilaster strips (Fig. 5) placed against the internal divisions of the structure. It is true that the Romans had employed engaged columns in the outer walls, as in the Flavian amphitheatre, but these had

a purely decorative purpose, and even in the early Romanesque monuments the pilaster strip had little structural value.

— It did, indeed, somewhat stiffen the walls, which had not the enormous thickness of Roman walls; but it had not strength enough to bear much vault pressure. It had, however, rarely to meet such pressure except in the aisles where the vaulting was of no great span. But though it was of slight efficiency, its introduction was an important step in

FIG. 5.

organic architectural development. It marked the internal structural lines, and in the later types of Romanesque, as the construction of vaulting became more general, the pilaster strip was converted into the true buttress (Fig. 6).

Further progress was made when the Romanesque builders of Northern France began to vault their naves. It was then found that the pilaster strip against the clerestory wall, or even a buttress like that shown in Fig. 6, was not enough to stay vaults of so much wider span than those of the aisles for which these primitive forms of abutment had been adequate. Expedients to augment the resistance of the clerestory buttress were accordingly resorted to, which were destined to yield unforeseen and important results. The earliest of these are well illustrated in the two great churches of Caen — the Abbaye-aux-Hommes and the Abbaye-aux-Dames. In the first of these buildings, the vaulting, which dates from the early part of the twelfth century, is (as will be shown in the next chapter) formed in such a manner as to exert very powerful side thrusts. To meet these thrusts the expedient was adopted of constructing half-barrel vaults springing from the aisle walls and abutting against the walls of the nave beneath

FIG. 6.

the lean-to roof (Fig. 7). These were in reality concealed continuous flying buttresses. But they were flying buttresses of bad form; for only a small part of their action met the concentrated thrusts of the vaults that they were designed to stay, the greater part of it operating against the walls between the piers where no abutments were required, and where their

FIG. 7.—Section of the Abbaye-aux-Hommes.

own inward thrust would have been disastrous had not these walls been made excessively strong. In the Abbaye-aux-Dames (Fig. 8), whose vaulting was constructed at a little later time, a better form of buttress occurs.<sup>1</sup> In this case, perhaps following an initiative that had been recently taken in the Ile-de-

<sup>1</sup> Cf. *L'Église Ste. Trinité et l'Église St. Étienne à Caen*. Par V. Ruprich-Robert. Caen, 1864.

France,<sup>1</sup> instead of a continuous half-barrel vault springing from the aisle wall, separate arches were established upon the abutments of the aisle, and brought to bear against the buttresses of the clerestory on which the thrusts of the vaulting were gathered. The thrusts and counterthrusts were thus concentrated, though not as yet in the most effective manner. For the abutting arches still fell too low to offer a perfect

FIG. 8. — Section of the Abbaye-aux-Dames.

resistance. In the course of time they yielded, and the vaults had recently to be reconstructed. Hence, though an important step had been taken, a satisfactory solution of the problem of effectual abutments for vaulting over a clerestory had not yet been reached. The abutting arches of the Abbaye-aux-Dames are indeed rudimentary flying buttresses, but they are ill adjusted, and are not externally apparent.

<sup>1</sup> In the buttresses of the choir and apse of St. Germer-de-Fly described in the following chapter.

Before this stage of buttress development had been reached in France, the Lombard builders had, as already remarked, and as we shall in the next chapter more fully see, introduced a system of independent arches or ribs of stone along the lines of the groins, and upon the four sides of their vaults, projecting below the vault surfaces, and in a measure sustaining them. The value of this strong stone centring was great, also, in preventing any rupture that might by any chance take place in one cell or compartment of the vault from communicating itself to the others. The Romans had, indeed, previously employed a system of arches to strengthen their vaults of concrete, and to facilitate their construction,<sup>1</sup> but these arches were embedded in the vault itself, and hence did not constitute an independent and visible framework having the same architectural value and mechanical function. The application of this ribbed system of vaulting, together with the functional grouping of supports above mentioned, to oblong as well as to square areas, completed the structural improvements devised by the Romanesque builders of Northern France.

We are yet, however, far from the Gothic system. The inert principle of ancient Roman design still largely survives; the heavy vaulting, massive walls, and small openings of this Romanesque architecture are opposed to the principles of Gothic. But the system is quickening with a latent life which will ultimately transform the structure, and give it a radically new character and expression. From this stage, the evolution of the Gothic style consisted in gradually perfecting the rudimentary skeleton, so as to make it independent of the heavy walls. To every part the highest working efficiency was at length given, together with an appropriate artistic form.

All this was rendered possible by the introduction of the pointed arch, which was not originally employed on account of any merely æsthetic preference for this form of arch in arcades, or in doors and windows, but as a constructive device in vaulting. The properties of the pointed arch, which enabled the Gothic builders to overcome difficulties in vaulting that had been before insuperable, are that it exerts less powerful thrusts than the round arch, and that with a given span its crown may be made to reach any level. Its employment in the narrow

<sup>1</sup> Cf. Choisy, *L'Art de Bâtir chez les Romains*, Paris, 1873, p. 76 et seq.

arches of a vault made it easy to raise their crowns to the levels of the wider-spanned arches. The vaulting of oblong areas had before been attended with difficulties, resulting from the fact that the height of the crown of a semicircular arch is determined by its span. In vaulting such areas, the crowns of the round arches which spanned the narrow sides would not reach the level of those which spanned the longer sides, while if full semicircular arches were used over the diagonals (on the Byzantine principle, to be considered in the next chapter), their crowns

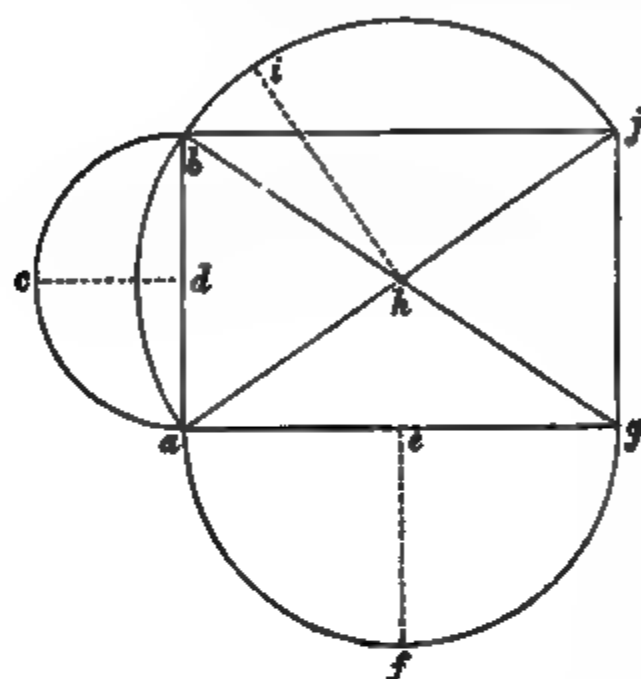


FIG. 9.

would reach above all the others. Thus (Fig. 9) the height  $cd$  of the arch  $acb$  is less than  $fe$ , the height of the arch  $afg$ , which again is exceeded by  $ik$ , the height of the arch  $aij$ . A vault constructed on such a system of arches must have an excessively domical form. To obviate this, in part, the expedient was adopted of stilting the narrow arches. That is, the level of their springing was raised by a

vertical substructure, considerably above that of the greater arches, so as to bring their crowns nearer to the same height, and thus to reduce the amount of doming required. But even when thus formed, an oblong groined vault upon round arches is heavy, exerts powerful thrusts, and presents an inelegant appearance. Oblong groined vaults, though sometimes constructed, were, therefore, usually avoided by the Romanesque builders of the north, who, indeed, had rarely vaulted their naves, the portions of the building where, in Northwestern Europe, oblong compartments most frequently occur. They generally contented themselves with vaulting the aisles, the compartments of which were commonly square, and where groined vaults on round arches were easily built with security.<sup>1</sup> The introduction

<sup>1</sup> The Lombard and Rhenish Romanesque builders avoided the difficulties referred to in the text by planning their buildings with square compartments in both nave and aisles, one bay of the nave embracing two bays of the aisles. This gives

of the pointed arch, however, obviated these difficulties. By means of the pointed arch it became possible to construct groined vaults over oblong compartments, without either doming or stilting, since the crowns of all the arches could be readily brought to the same level, whatever their difference of span (Fig. 10).

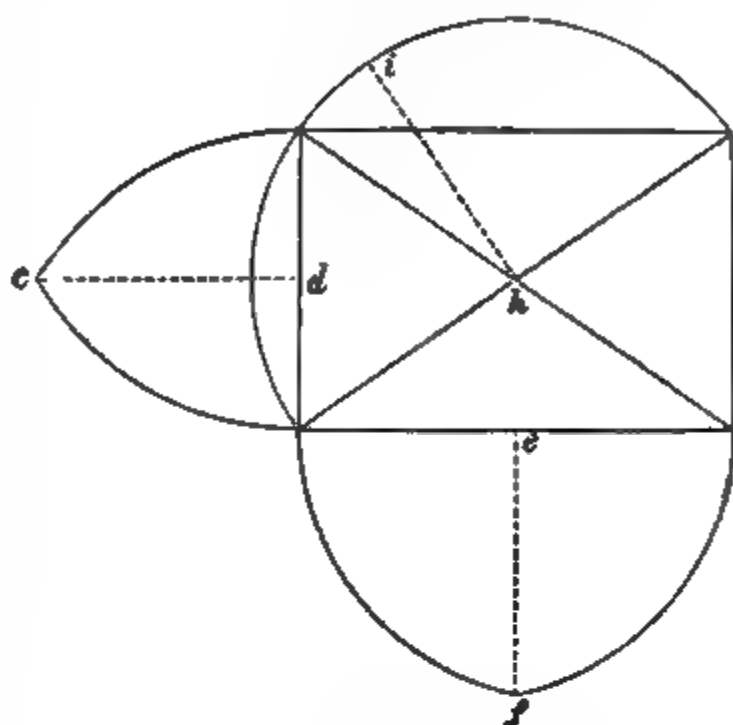


FIG. 10.

But it is important to observe that in true Gothic architecture oblong vaults over naves are never constructed upon arches which all spring from the same level, and whose crowns all reach the same height. Other exigencies, which will be explained in a following chapter (see p. 130), stood in the way of so constructing them. True Gothic vaults are always to some extent both stilted and domed. But though the full advantage of the pointed arch, in reaching any height with any span, could not be taken, its employment greatly diminished the thrusts, obviated the necessity of excessive doming, and thus yielded more elegant effects and gave a powerful stimulus to invention.

With diminished and better concentrated thrusts better forms and adjustments of the external stays were soon devised. The flying buttresses were brought to bear more directly on the points of vault pressure—which were found to extend to a higher level than that on which the arches of the Abbaye-aux-Dames had abutted. In order to reach these points, it was found necessary to carry the abutments over the aisle roofs, and thus to render them conspicuous external features. The vault ribs were now improved in form. Their profiling, though still simple, became more elegant, and their grouping was rendered more compact at the springing; while the sustaining rise to an alternation of large and small piers in the nave, as will be more fully explained in the following chapter.



shafts, for which the best materials were selected, were adjusted in new and ingenious ways, and their bulk was reduced to a minimum. Thus an independent framework was created, and

the intervening walls, now no longer needed for the stability of the fabric, were greatly reduced in thickness, and, at length, almost wholly suppressed. The small apertures of the Romanesque style were gradually enlarged until the clerestory and aisle openings entirely filled the spaces between the piers.

The general form and constructive character of a developed Gothic building may be summarized as follows:—

1. The plan (Fig. 11) consists of a central nave, the eastern portion of which forms the choir, with side aisles, sometimes one and sometimes two on each side; and with a transept usually also provided with aisles. The choir

FIG. 11. — Amiens.

terminates eastward, almost invariably, in a segmental or polygonal apse, or sanctuary, around which the aisles are continued. Opening out of the apsidal aisles are usually a series of small chapels, the central one of which is, in most cases, more largely developed

than the rest. The transept arms have commonly rectangular ends, and the west end of the nave is invariably rectangular. The nave is divided from the aisles by a row of piers on each side which support the superstructure, consisting of the triforium and the clerestory. On the outer sides of the aisles are half-piers, or responds, against which are set the great buttresses of the exterior, and the spaces between them are enclosed by low and comparatively thin walls with openings above them reaching from pier to pier and up to the arch of the aisle vaulting.

2. The vaults, whose forms and proportions determine the number and arrangement of the piers and buttresses, are constructed upon a complete set of salient ribs; namely, transverse ribs, diagonal (or groin) ribs, and longitudinal ribs.<sup>1</sup> These ribs are independent arches, of which the transverse and longitudinal ones are pointed, while the diagonals sometimes remain round. Upon these ribs the vaults rest — the one never being incorporated with the other.
3. The ribs are sustained by slender shafts, compactly grouped, and often engaged, bonded by their bases and capitals, if not throughout their length, with the great piers which rise from the pavement through the successive stories of the building to the nave cornice. In addition to the shafts which support the main ribs of the vault are shorter ones to carry the great archivolts (the arches of the main arcades), the ribs of the aisle vaulting, and the arches of the triforium. To the pier is added a rectangular buttress which rises through the triforium and becomes an external feature

<sup>1</sup> I call the rib which runs parallel with the long axis of the building the longitudinal rib, rather than by its common English name wall rib, because in the developed Gothic architecture there are no walls in the clerestory, or in the upper parts of the aisles. The ribs named in the text — transverse, diagonal, and longitudinal — are the only ribs that are structurally necessary, hence they may be said to constitute a complete rib system. The additional ribs, — *liernes* (short connecting ribs) and *tiercerons* (ribs placed between the transverse ribs and the diagonals), — which appear in later forms of vaulting, more especially in England, have no necessary mechanical function. The introduction of such ribs was a violation of the principles of true Gothic art, in which no superfluous features occur.

in the clerestory. Each pier is thus a compound member consisting of a great central column with which are incorporated smaller shafts and a buttress. By these piers the vaults are supported—their thrusts being so completely neutralized by the external buttress system that they require to be only massive enough to bear the weight of the vaults.

4. The clerestory buttresses are reinforced by flying buttresses, which are segments of arches rising from the vast outer abutments (the external members of the responds of the aisles) and springing over the aisle roofs. These flying buttresses are the most characteristic features of the Gothic exterior.
5. Walls proper are almost entirely omitted. Those that are retained are the low enclosing walls of the ground story, and the spandrels of the various arcades. The spaces between the piers, and beneath the arches of the vaulting, in both clerestory and aisles, are entirely open, like the intercolumniations of a colonnade. They are formed into vast windows, divided by mullions and tracery which support the iron bars to which the glazing is attached. It will thus be seen that the full development of the Gothic system is brought out only where the plan of the building includes a high central nave and lower side aisles. It was in such buildings that the system was evolved. The active principle introduced with the flying buttress, as opposed to the comparatively inert principle of the Romanesque wall and wall buttress, is the distinguishing principle of Gothic construction, as we have already remarked. By the flying buttress in connection with the pointed arch in the ribs of the vaulting, and a peculiar adjustment of these ribs (to be explained farther on), is the Gothic concentration and resistance of thrusts rendered possible. A building without aisles, like the Sainte Chapelle of Paris, may, indeed, consist of a simple open skeleton sustaining vaults. When the system was once developed in buildings of three or more aisles of unequal height, it was natural to employ a simpler form of it in the construction of those of simpler plan.

But it is unlikely that architecture like that of the Sainte Chapelle would ever have come into being had buildings of so simple form only been required. It was the need of vast stone-roofed churches, such as could not be constructed without aisles, that stimulated the genius of the Gothic builders and led to the production of the remarkable monuments of the Middle Ages that fill us to-day with wonder and admiration.

Such, in brief outline, is the structural character of Gothic architecture. It was not, however, in constructive invention alone that the genius of the Gothic builders found expression. The Gothic edifice was not merely an organic structure of naked masonry however ingenious. It was wrought with a fine sense of proportion<sup>1</sup> and was enriched by the auxiliary arts of carving and colour design. Before the time of Gothic art a genuine aptitude for sculpture and painting had been manifest in the northern genius. But the early works of the races of Northern Europe in these arts were grotesquely rude and uncouth, and the same character has been mistakenly attributed to the work of the Gothic artists. But Gothic art is by no means rude and uncouth. It is, in its best forms, highly refined and elegant; for it is not a product of the unmixed and uncultivated northern peoples. By the twelfth century the mingling of races, which had long been going on in France, had at length produced a people in whose constitution were happily blended some of the best characteristics of the Latin, Celtic, and Teutonic stocks. It was this people who developed the Gothic style and gave to its marvellous constructive system equally new and appropriate types of carved and painted adornment. Gothic architecture, with its wealth of sculpture and painting, is not an art of barbarians, as the Neo-classicists of the Renaissance and many more recent writers have supposed. It is far otherwise. It is an art of that civilized people which grew up, through generations of conflict and

<sup>1</sup> To what extent the mediæval architects intended to observe any mathematical formulas of proportion I do not know; but it is certain that they followed no such formulas with any strict precision. Formulas are, indeed, foreign to artistic work, and are inimical to beauty. Hence Bacon's remark: "There is no excellent beauty that hath not some strangeness in the proportion."

mutual interchange of ideas, out of the fusion of Northern and Southern blood. This fusion produced a superior race, a race equal in artistic capacity to any of those of ancient times, and in which the genius of the North supplied a fertile imagination and a daring spirit of innovation, while that of the South contributed a disciplined sense of beauty and an inheritance of classic culture. Thus, Gothic art, though embodying widely different principles, is no less remarkable and admirable than classic art. Indeed, notwithstanding its difference, Gothic art has much in common with that of classic antiquity. In breadth of design, coördination of parts, and measured recurrence of structural and ornamental elements, the Gothic artist obeyed, though in a different form, the same primary laws that had governed the ancient Greek.

While both sculpture and painting were employed as auxiliaries, it was sculpture rather than painting that reached a high degree of perfection in the mediæval system. This does not, however, appear to have been due to any lack of aptitude for painting, but rather to the fact that the Gothic artists were pre-occupied with the creation of a form of architecture which afforded little field for the exercise of the painter's art—except such as had a purely ornamental character. In painting of this kind the French workmen of the twelfth and thirteenth centuries attained a degree of excellence that no others have ever equalled. The art of producing brilliantly coloured designs in glass to enclose the vast openings of the new architecture was, indeed, a kind of painting which the Gothic artists developed magnificently, and made peculiarly their own. But a twofold convention—that of architectural fitness on the one hand, and the far-reaching one growing out of the nature of the translucent material on the other—limited this art to the most strictly heraldic conditions.

But for sculpture there was an unlimited field, and in this field the grandest achievements were reached. In Gothic sculpture a singular correspondence with the spirit of Gothic construction is noticeable. As what may be likened to a living organic principle distinguishes this construction, so does a vital principle find expression in Gothic sculpture to an extent unequalled in the sculpture of any other school or epoch. An appreciation of the animating spirit of nature, from which all

the elements of this sculpture are drawn, is invariably displayed. Whether in subordinate ornamentation—the enrichment of capitals, the running patterns of string-courses, the *voussoirs* of archivolts,—or in the sculpture of the human figure itself, this expression of life is always marked. It is true that in the ornamental sculpture of the best previous schools of art a vital character is often noticeable, and is seldom wholly wanting. Most Greek ornamentation, though severely abstract and conventional, owes its essential beauty to qualities of line and surface that suggest life. And in Greek, as in Gothic, art these qualities were plainly derived from natural organic forms. I do not mean to affirm that there was in the mind of the Greek carver, when elaborating his ornament, any direct and conscious reference to nature, or any imitative intention. But the inspiration of nature is clearly apparent even in the most abstract elements of Greek ornamental design, except such as are of a purely geometrical character. The profiles of Doric capitals, Ionic volutes, and of acanthus leafage afford instances which will occur to every student of Greek art. But in Gothic ornament this expression of life takes a wider range, and the suggestion of nature is more full and varied. Even a resemblance to many different species of vegetation appears, and an extensive architectural flora is at length evolved (answering, it is said, in some cases to the natural flora of the locality in which the work is wrought) and used to adorn the structural forms.

But the varied ornamental schemes of Gothic art are not independent creations any more than is the structural system an independent development. Their roots may all be traced back to the arts of antiquity. The ancient ornamental motives and arrangements had survived under variously modified forms in the works of the Romanesque designers. They had, indeed, been often imitated without intelligence or skill, and many changes resulting from ignorance and incapacity had been made. But with the renewed artistic activity of the eleventh century improvements were made, and in the later Romanesque art a new spirit was already infused into them. In the hands of the Gothic artists, however, they received a still more vital character, and were developed with a fertility of invention, and an artistic power, altogether without precedent.

Yet, notwithstanding its remarkable expression of life based

on nature, the work of the Gothic carver is as a rule appropriately conventionalized. Only those abstract qualities of form which are capable of effective monumental treatment are taken from nature. Nothing more than this appears until the period of decadence in Gothic art. The conventional character of the work is of the kind that results from a just sense of the purposes and limitations of architectural sculpture which the mediæval designer had acquired from time-honoured tradition, and which was consonant with his own native feelings. He instinctively felt the universal applicability of the principles that had governed the arts in ancient times. He saw that they were based upon immutable laws of disposition, relation, and quantity; and thus that while the component elements of an ornamental scheme might be re-created and endlessly varied, the ruling principles of arrangement might not be disregarded. And they never are disregarded in pure Gothic art. The general scheme always bears evidence of its ancient origin. Thus in the west front of the Cathedral of Amiens there are string-courses whose ornamental elements are formed and arranged so as to recall the well-known egg and dart scheme of the Greeks. Others correspond to various meanders and scrolls of classic design. But instead of the formalized abstractions of the antique details, we have often the generic types, and even many of the specific peculiarities, of natural leafage. In the one motive a rounded foliate or floral boss answers to the ovate members of the ancient scheme, while a tendril with lateral leaves answers to the dart. In the others the meander or scroll is a living branch, into the spaces enclosed by the wavy or convoluted lines of which grow, as of their own volition, unfolding leaves, which give place at intervals to springing, crouching, or reposing animals and birds. Everywhere in Gothic art do we find expression of organic life, but this life is invariably governed by the exigencies of architectural fitness. The artist, while keenly appreciative of nature, has a constant regard to the conditions of his art.

The same vital beauty, and the same monumental treatment, mark Gothic figure sculpture. And in figure sculpture, no less than in foliate ornament, ancient traditional principles of design form the basis on which the new developments are wrought.

In a definition of Gothic architecture only the purest forms of the art properly concern us. Its decadent phases need not be followed, nor need we consider the many imitations and modifications of Gothic which arose in different parts of Europe after the twelfth century. These often possess great interest, and sometimes even great beauty, but they do not afford a true illustration of the Gothic style. The pure Gothic, that which alone is really a new and consistent style, differing fundamentally in its structural and ornamental systems from all other styles, is, as we shall see, native to France only. Hence, upon the Gothic of France our definition is necessarily founded.

This Gothic architecture, like every other great art, was in its completeness of short duration. After a long period of preparation and germination, — a period extending through all the earlier Middle Ages, — the organic Romanesque types of Lombardy and Northern France were produced, in which we see that the genius of the builders was reaching out more and more after new principles, and this inventive progress went on until at length a combination of happy conditions conspired to bring them into full embodiment. The eleventh and twelfth centuries brought about in Northern Gaul that fine balance of ethnologic, religious, social, and political influences which gave character to the newly formed French nation, and of which Gothic architecture is among the noblest manifestations. But the spiritual and intellectual forces that were active in the twelfth and thirteenth centuries suffered a change thereafter, and a corresponding course of architectural decline set in. If we would really know Gothic art, we must study it in the vigour and beauty of its early, and first mature, life. Its characteristics in these states are what I have attempted briefly to describe and shall, in the succeeding chapters, endeavour more fully to illustrate.

The edifice which most completely embodied the Gothic spirit was the cathedral — the leading object of popular, municipal, and ecclesiastical interest and enthusiasm. In the cathedral church were centred the most potent and active interests — religious, communal, and social; and on it was expended the best genius of the time, as well as the vast material resources which the free communes were now able to command. The



cathedral thus became a substantial expression of the growing freedom from feudal oppression, and of monarchial and communal organization—as well as of religious faith and aspiration. History affords no parallel to the spirit which gave rise to the Gothic cathedral. The nearest approach to it was that which produced the Greek temple. Both grew out of conditions of strong popular enthusiasm engaging with religious and civic ardour in the construction and adornment of monuments for public benefit and enjoyment. It was the cathedral, the largest, the most comprehensive, and the most popular form of the Christian church, that brought out the full development of Gothic architecture.

Nevertheless, the first steps of development from Romanesque to Gothic were taken before the great cathedral movement set in. They were taken in the monastic churches, and with them the study of this development must begin.

The vast new impulse in building, which in the eleventh century extended all over Christian Europe, assumed a peculiar and potent character with the religious orders of the North. In Italy, while buildings of great extent and magnificence, such as the Cathedral of Pisa, were at this time begun, no new system was foreshadowed in their construction, no new principle was introduced.<sup>1</sup> But north of the Alps, or rather north of the Loire, a new architectural style was rapidly forming. The monastic orders of the North, less given than those of the South to seclusion, contemplation, and inaction, soon became very energetic builders. With them mutual intercourse and interchange of ideas were general, a spirit of invention was active, and constructive enterprise was astir in all directions. The immunity from pillage which the monastic establishments had enjoyed during the most troubled times had enabled them to accumulate wealth, and thus made it possible for them to enter upon extensive building operations to provide more ample and more elegant accommodations the need of which had its source in their enlarged relations with the masses of the people. The monasteries had early taken every means to qualify large bodies of men to practise the arts. They had organized and maintained schools where art and science were

<sup>1</sup> The Lombard architecture of Northern Italy forms an exception, of course; but this was not really a native Italian art.

taught, where architecture, sculpture, and painting were cultivated under guidance of traditions which regulated the leading forms of production while they yet left some scope for the free play of new ideas.<sup>1</sup> Under these conditions of monastic life and organization were made the first attempts to improve the forms and methods of vaulting, which led to the structural use of the pointed arch and to the infusion of a new spirit into the old forms of ornamentation. The early monastic building experiments were often awkward and unsuccessful, but the builders were quick to profit by failure, and to embody the new ideas which failures suggested in fresh undertakings, which, however imperfect, were improvements on what had been done before.

But the monasteries, active and ingenious as were their inmates, were not the sources from which were to issue the most potent ideas and influences. The full development of the Gothic system was not to be the work of the monk. The freest exercise of invention could not be called out under the shadow of the cloister, and the architectural requirements of monastic routine and ceremonial were of comparatively narrow range. A freer spirit of enterprise, a wider experience of life, and a more majestic ritual were needed to call into activity the highest powers of the creative imagination, and fully to develop the genius of the Middle Ages. Yet there are few things more interesting, more instructive, or more beautiful in human history than the spectacle of these early cowed builders struggling against all difficulties and disadvantages, and laying the foundations of a new art which was, in the stronger hands of their lay successors, to culminate in the marvels of Chartres and Amiens.

One further point must be noticed; namely, that the architecture of the Middle Ages not only reached its highest perfection in the cathedrals, but that it was, in the strictest sense, an architecture of churches primarily. That is to say, it was in church edifices alone that the Gothic style was developed, and it was in these only that it could be completely embodied.

<sup>1</sup> The monastic buildings were not only planned, and the works on them directed, by the monks, but they were also largely, if not entirely, constructed with their own hands. Cf. Lenoir, *Architecture Monastique*, p. 36 et seq., and Montalembert, *Les Moines d'Occident*, vol. vi. p. 242 et seq.

The structural and ornamental forms that were first brought into being in the church building were afterwards applied, as far as they were suitable, to such civil, military, and domestic buildings as were to have any architectural character; but in such buildings there could be no independent developments of a Gothic kind. Broadly speaking, this has always been so. Architecture inspired by religious zeal, and intended for religious uses, has ever preceded that designed for secular purposes, and has mainly determined the character of secular building. We are apt to forget that the leading architecture of the Egyptians was that of the temple; that their temples were the chief architectural monuments of the Greeks; that the best elements of classic Roman architecture were borrowed from Greek temples; that the civil and domestic architecture of the Middle Ages was that of the churches adapted to civil and domestic needs; and that the original elements of modern architecture were first developed in ancient temples and mediæval churches.

Finally, it should be considered that the Gothic edifice, with its myriads of sculptured forms, was like a vast open page whereon were written, in imagery which the most illiterate could read, the legends and traditions of the mediæval faith. These legends and traditions must be reckoned among the chief sources of inspiration and stimulus to the imaginations of the Gothic builders. They appealed to the warmest sympathies and quickened the highest aspirations of the people, and filled them with devotion to the fabric which they sought to make, at whatever cost of labour and of treasure, a fitting expression of their beliefs and hopes.<sup>1</sup>

As already remarked, and as this work is largely designed to show, this architecture is native to France, and to France only. But our consideration of the rise of Gothic art in France must be preceded, in the next chapter, by a fuller examination of the sources of Gothic in the Romanesque developments that were in progress from the breaking up of the Roman civilization to the beginning of the twelfth century.

<sup>1</sup> The terrors held out by the dogmas of the mediæval church, the fear of a materially conceived hell of torment, etc., may have contributed, in some measure, towards the church-building activity of the Middle Ages. But the zeal which mainly animated the Gothic artists was certainly not from this source.

## CHAPTER II

### THE SOURCES OF GOTHIC

BEFORE entering upon a fuller consideration of the development of the Gothic style out of the Romanesque, some examination of the evolution of the Romanesque itself, and of its principal varieties, is necessary to a proper understanding of our subject. The Gothic system was immediately evolved out of the Romanesque of Northern France, which began to assume its characteristic forms in the eleventh century and reached its completest type, as we shall see, by 1110 in the nave of the Church of St. Étienne of Beauvais. But the principles and elements of this Romanesque architecture were partly in turn derived from more ancient sources, and from various distant localities. In fact, the evolution of the architecture of the Middle Ages begins with the earliest departures from the principles and constructive forms of the art of imperial Rome and culminates in the Gothic art of the twelfth and thirteenth centuries. The various types of Christian Roman and Romanesque building which intervene are but so many phases of a transitional art, except such as are only survivals of old forms devoid of progressive character. This fact has, with a few recent exceptions, hardly been recognized by writers on mediæval architecture. It was, however, virtually implied by Quicherat forty years ago in his excellent definition of Romanesque,<sup>1</sup> which is as follows: "L'Architecture Romane est celle qui a cessé d'être romaine, quoiqu'elle tienne beaucoup du romaine, et qui n'est pas encore gothique, quoiqu'elle ait déjà quelque chose du Gothique." This definition removes the beginning of Romanesque to a period far anterior to the eleventh century, when that of Northwestern Europe first takes form. If that architecture is Romanesque which has ceased to be Roman while it has not

<sup>1</sup> Given in his essay, "De l'Architecture Romane," originally published in the *Revue Archéologique*, and reprinted in the *Mélange d'Archéologie et d'Histoire* edited by M. de Lasteyrie. Paris, 1886.

yet become Gothic, though it has some elements of Gothic, then we must look for the beginnings of Romanesque in those architectural systems which exhibit the earliest innovations on the Roman principles of design. Those systems arose in the Eastern countries, chiefly in the Byzantine Empire, where, after the decline of the older Roman civilization, the conditions first became favourable to a fresh creative impulse in the fine arts. Our examination of the sources of Gothic must, then, begin with the nascent Romanesque of these Eastern countries.

The architecture of imperial Rome was incapable of structural development without material changes in its principles and forms. The square cross-vault, with its elliptical groins and cylindrical surfaces, was an inflexible vault; and the oblong cross-vault, with its wavy groins, was hardly less so. The ponderous walls and piers that sustained this vaulting covered an excessive area, but could not be safely reduced in volume, while the superficial application of the trabeate orders to this arched construction presented an insuperable obstacle to the evolution of a logical and appropriate architectural style.

The earliest departures from the Roman structural and ornamental forms seem to have been made in the Asiatic provinces, — chiefly in the cities of Central Syria, — where as early as the second and third centuries a rational and consistent use of arches and columns was made, and the Greco-Roman mouldings were admirably modified to suit new conditions.<sup>1</sup> In the later constructions of this region, dating from the fifth and sixth centuries, structural developments were reached which give to these monuments a strikingly Romanesque appearance.<sup>2</sup>

In these constructions arches always spring from the heads of the piers or columns, no bits of entablatures are interposed, and no framing in of the arches by columns and entablatures occurs. Where arches are sprung across the nave, dividing it into bays, additional supports are inserted, which are grouped with the piers of the longitudinal arcades in a manner that foreshadows the grouping of supports in the later Romanesque and Gothic systems. These logical structural adjustments were, perhaps,

<sup>1</sup> Cf. the Pretorium of Mousmieh and the Basilica of Chaqqa, described and illustrated by M. de Vogüé, in his *Syrie Centrale*. Paris, 1865-1877.

<sup>2</sup> Cf. in the same work the churches of Barbouda, Roueiba, Baquaza, Qalb-Louzeh, and Tourmanin.

not without influence upon the later Roman art of the West. The famous Arcade of Spalato (circa 300 A.D.), the Basilica of Maxentius, and other similar Roman works which (unlike most Roman buildings) exhibit similar features, may not improbably, in respect to them, have been derived from this Syrian source.

The naves of the churches of Central Syria were generally covered with timber roofs. Vaulting is rare, and the only vault forms that occur are the barrel vault, the dome, and the semi-dome. None of these forms had any part in the evolution of the Gothic style,<sup>1</sup> and hence they do not concern us here, though they were all extensively employed in many varieties of Romanesque. The general absence of vaulting precluded any further structural progress in this early Syrian architecture, unless the use of short shafts resting on corbels against the clerestory wall and supporting the timber roofs, which sometimes occur,<sup>2</sup> may be regarded as foreshadowing a similar arrangement that was subsequently employed in the Romanesque of Southern France and elsewhere.

To what extent the rise of the Greco-Roman architecture of Central Syria may have been due to an influence from the further East, it is difficult to determine; but it appears that in Persia the arch had been sprung from columns from very ancient times—as in the altars of Nakhche-Roustem<sup>3</sup> dating, it is believed, from before the time of Cyrus. By the sixth century A.D., a system of blind shafted arcades, with taller shafts at intervals embracing several stories of an edifice, was in use,<sup>4</sup> closely resembling the arcades and pilaster strips of the Lombard and Rhenish Romanesque of the Middle Ages. But the first system in which important innovations in vaulting (where all fundamental structural progress in mediæval architecture has its rise) occur is the Byzantine. Without attempting the difficult task of explaining the manner in which the rudiments of an organic architectural system, which had arisen in the farther East, were first laid hold of by the constructors at Con-

<sup>1</sup> A theory has been lately put forth by M. Corroyer (*L'Architecture Gothique*, Paris: Quantin), which derives the Gothic system from the Byzantine dome on pendentives. This theory has been promptly refuted, and it will hardly commend itself to any discriminating student of Gothic art.

<sup>2</sup> As in the Church of *Qalb-Louneh*, de Vogüé, *Op. cit.*, plate 126.

<sup>3</sup> Dieulafoy, *L'Art Antique de la Perse*, part 3, plate 5.

<sup>4</sup> As at Ctesiphon, Dieulafoy, *Op. cit.*, part 5, plate 3.

stantinople, it is enough to observe that still further improvements on the Roman principles of design early began to appear in the Byzantine capitol, where the Greek genius, under the stimulus of the improved conditions of society that followed the establishment of the new seat of empire, exercised a dominant influence. In this system, which first stands forth in its complete character in the Church of St. Sophia, we have a consistent architectural type distinct from the Roman; and one which contains the seeds of still further development.

The most conspicuous, and the most distinctive, feature of the Byzantine style, the dome on pendentives, does not concern us here, because, as already observed, the dome was a form of vault that contributed nothing toward the formation of Gothic. The most pregnant innovation of the Byzantine constructors was the domical groined vault with which the small square and oblong compartments of the aisles and the narthex of St. Sophia are covered. This vault has nothing in common with the Roman groined vault. It is formed on a different, and far more flexible, principle. The typical Roman groined vault consists of two half-cylinders of equal diameter intersecting at right angles. It necessarily has elliptical groins and level crowns, and can be adjusted only to a square area. Abandoning the idea of cylindrical interpenetrating vaults, the Byzantine architect conceived a form in which the groins, as well as the arches on the four sides of the vault, should be semicircular. This, as explained on p. 16, raised the crowns of the groin arches above the level of the crowns of the side arches, and produced surfaces that were nowhere cylindrical, but were concaved more or less like the inside of a dome, though no portion of its surface is perfectly spherical. By this innovation the restriction to square areas in groined vaulting, to which the Romans had for the most part been confined, was overcome without resort to the device of stiling, by means of which the later Roman builders had sometimes awkwardly covered oblong compartments.<sup>1</sup>

In addition to this improvement in vaulting the Byzantine constructors made equally important improvements in the forms of the capitals and bases of columns, in adapting them to an

<sup>1</sup> As in portions of the Baths of Caracalla. For illustration of Roman and Byzantine vaulting see Viollet-le-Duc, *Dictionnaire*, etc., s.v. *Voute*, and A. Choisy, *L'Art de Bâtir chez les Romains* and *L'Art de Bâtir chez les Byzantins*.

arched system of construction. In the arcades of St. Sophia, especially in those of the apsidal alcoves adjoining the half-domes that abut the central dome east and west, are columns with capitals and bases which, as will be shown in a later chapter, closely approach in form those that support the arcades of the apsidal aisles of early Gothic structures. Other features of the Byzantine architecture which anticipate those of subsequent Romanesque and Gothic design are: galleries over the aisles,<sup>1</sup> groups of shafted arches embraced by a larger arch, and the grouping of arch orders in receding planes.

It was long before further developments took place. The later Byzantine art exhibits no new structural features; and in the countries of Western Europe the conditions during the early Middle Ages were too unsettled to admit of architectural progress. Building activity continued; but the types of design already created were more or less imperfectly followed by the unskilled workmen of Italy, Gaul, Germany, and Britain.

The Byzantine influence at Ravenna during the exarchate did little more than to engraft some Byzantine details upon the structures of the Christian Roman type. In the Church of St. Apollonare in Classe, however, a feature unknown to the Byzantine system occurs,<sup>2</sup>—that, namely, of a pilaster strip marking on the exterior the internal divisions of the edifice. If this be a part of the original work, it may, it would seem, be regarded as the earliest instance of the use of a member that was ultimately developed into the Gothic buttress.

The artistic stimulus temporarily given to the arts of the West by Charlemagne was not a fruitful one. The rough Northern races that successively invaded the west of Europe brought no arts with them. They had not, in their old homes, reached a sufficient degree of civilization to develop any but the rudest arts. The great influence which these races subsequently exercised on the arts of the West was largely due to the culture and training which, after settlement, they acquired by contact with the native peoples. This taught them how to bring their own original genius into effective play, and enabled

<sup>1</sup> Cf. Cattaneo, *L'Architettura in Italia dal Secolo VI al Mille Circa*, Venice, 1889, p. 38.

<sup>2</sup> Of which we have noticed (p. 31) a Persian adumbration in the palace at Ctesiphon.



them ultimately to contribute so much towards the formation of the magnificent arts of the Middle Ages. But during the Carolingian epoch these Northern races did not reach any considerable degree of independent artistic power. On the other hand, the genius of the Latin peoples, depressed by the dispiriting burdens and the catastrophes that had followed the dissolution of the ancient social order, was at this time inactive. Hence the monuments of this period exhibit few innovations on the principles and forms that had been established in Roman and Byzantine art. The Church of Aix-la-Chapelle, however, which is a simplified copy of the polygonal Church of St. Vitale of Ravenna, and is the most important building that has survived from the Carolingian epoch, exhibits one peculiarity that bespeaks constructive ingenuity worthy of notice. The vaulting of the concentric aisle of the ground story of this building is contrived in a manner that avoids the trapezoidal compartments of St. Vitale. This is accomplished by doubling the number of the sides of the external polygon, so as to get a series of radiating square vaults with intervening triangular compartments (Fig. 12). This arrangement was afterwards reproduced in the Rotunda of Brescia, and later still in the Gothic apsidal aisles of Notre-Dame-en-Vaux (Chalons-sur-Marne) and of the Cathedral of Le Mans.

The first conditions leading to a vigorous new life in Western Europe, and giving rise to fresh artistic developments, seem to have been those which followed the Lombard settlement in Italy, and the rise of the Italian republics. As before remarked (p. 9, note), no architectural innovations appear to have been made here during the actual Lombard dominion, but as early as the tenth century the germs of a progressive art were manifest, and by the middle of the century following an organic architectural system of great novelty and excellence had been produced.

No entire building of the Lombard Romanesque type dating from the tenth century has come down to us. But portions of Lombard structures are preserved, in some of which, as has recently been pointed out,<sup>1</sup> features unknown in the older types of building occur. The most important of these is a compound

<sup>1</sup> See Cattaneo, *L' Architettura in Italia dal Secolo VI al Mille Circa.*

form of support, consisting of a pilaster-like member and an engaged round shaft, apparently designed to carry vaulting. An example of this, dating it is supposed from the latter part of the tenth century,<sup>1</sup> occurs in the Church of San Felice near Vicenza. In the apse of St. Stephano of Verona we have what it seems likely may be the earliest extant instance of an

FIG. 12.

apsidal aisle; and in the vaulting of this aisle the arrangement already noticed in Aix-la-Chapelle is again carried out.<sup>2</sup> This curious apse is constructed out of fragments that had been rudely wrought for a still earlier building, and exhibits a

<sup>1</sup> Cf. Cattaneo, *Ibid.*, p. 229.

<sup>2</sup> The apsidal aisle itself, a feature which became so important in the later mediæval church architecture, may, it would seem, very possibly have been originally suggested by the circular and polygonal buildings with concentric aisles which had been common from early Christian times. Half of such a building would give the rudimentary form of the apse of a Romanesque or Gothic church.

lack of executive skill which renders only the more interesting its novel system.<sup>1</sup> Other new architectural features that became characteristic of the Lombard Romanesque, and afterwards of many other varieties of Romanesque design, are corbel-tables, pilaster strips, and ornamental arcades. These already appear in the apse of San Vincenzo in Prato at Milan, which dates from the ninth century.<sup>2</sup> Beyond this it seems impossible now to ascertain to what extent the peculiar Lombard system was developed at this early period. We learn, however, from these fragmentary remains that some of its features were then extant in primitive form.

It is not known that any mediæval structure completely covered with groined vaults of a date prior to the year 1000 survives. But we have two important monuments, one at least of which dates apparently from the second half of the eleventh century, that exhibit this earliest type of organic Romanesque in a fully developed form,—the Church of San Michele of Pavia, and the Church of St. Ambrogio of Milan. These churches have the Western cruciform plan; both have triforium galleries and both are vaulted throughout. St. Ambrogio is the earlier structure of the two. Its nave, aisles, and triforium galleries have groined vaulting in square, or nearly square, compartments, and since the nave is double the width of the aisles, each of its compartments necessarily embraces two of the smaller aisle compartments. It is to be observed that these vaults are constructed on the Byzantine model, having a domical form rather than that which results from the interpenetration of half-cylinders as in Roman groined vaults. This is an important characteristic, and its occurrence here in the very earliest form of organic Romanesque design is significant. For, as we shall see, it was the Byzantine, and not the Roman, groined vault that lent itself to those subsequent developments which culminated in the Gothic. How the Lombard builders were led to the use of this form of vault, we have no means of knowing. They may have become acquainted with it through the Byzantine works at Ravenna, where it occurs in the porch and on the east side of St. Vitale.<sup>3</sup>

<sup>1</sup> Cf. Cattaneo, *L'Architettura in Italia dal Secolo VI al Mille Circa*, p. 213.

<sup>2</sup> Cattaneo, *Ibid.*, p. 212.

<sup>3</sup> Cf. Dartein, *Étude sur l'Architecture Lombarde*, Paris, 1865-1882.

However this may be, they appear to have promptly recognized its structural advantages and they soon developed it farther in a remarkable manner.

In the vaulting of St. Sophia, already noticed, a strong salient arch is sprung over each of the four sides of each compartment.<sup>1</sup> Similar arches bound the vaults of the aisles and triforium galleries of St. Ambrogio. But in the vaulting of the nave of this later edifice features are introduced that we have not before met with, and which constitute the first and most far-reaching Lombard innovation; namely, salient arches, or ribs, following and strengthening the groins. This was a device of great importance; for these groin ribs, together with the bounding arches, formed a complete supporting skeleton by means of which the stone ceiling could be made much lighter than before, and which ultimately gave the greatest freedom in vault construction. To support these arches and ribs, corresponding additions were made to the great piers which gave each member in the vault its own vertical support. A similar support was also given to each of the arches of the ground story and triforium; and thus was produced the earliest form of the compound pier, which is a peculiar feature of the Northern Romanesque and Gothic art. The illustration (Fig. 13) will explain this system. It will be seen that the heavy transverse rib of the vault rests on a pilaster rising from the pavement, that the diagonal rib rests on an engaged round column placed in the reëntrant angle between the first pilaster and a second one which carries the wall rib, and that the doubled archivolts of the ground story are carried by the second pilaster and an engaged shaft, while those of the triforium gallery are carried on a short pilaster and an engaged shaft. The inner half of the small transverse rib (*a* in the figure) that separates the two aisle vaults comprised within each of the greater bays of the nave is carried by a small rectangular intermediate pier having an engaged shaft on either side to support the sub-order of the great archivolts. This intermediate pier carries also a diminutive shaft (*b*) rising against the arcade spandrels nearly to the triforium string. Above this a very low pier, of like form to the one below, carries the archivolts of the triforium. Thus we have in St. Ambrogio

<sup>1</sup> As is the case, also, in some of the ancient cisterns of Constantinople.

a system in which the great piers supporting the larger vaulting of the nave alternate with smaller piers whose function is confined to the vaulting of the aisles. This functional alternation of large and small piers is characteristic of the early vaulted Lombard structures. It is a consequence of the employment

FIG. 13.—St. Ambrogio of Milan.

of vaulting in square areas where the aisles are but half as wide as the nave, and the number of vaults in each aisle is twice as great as in the nave.

It may be well to remark that two types of groined-vaulted buildings occur in Northwestern Europe during the Middle Ages, which may be called, respectively, the alternate and the uniform; the alternate type, like St. Ambrogio, having the vault com-

partments arranged as at A, Fig. 14, and the uniform having them arranged as at B in the same figure. The alternate system seems to have originated in the early Lombard Romanesque, while the uniform system appears to have been developed in Northern France. In some cases the vaulting of the later Lombard edifices has been remodelled into the form that belongs to the uniform system, while the substructure retains the alternate form—as in the Cathedral at Parma. In the Northern Romanesque and Gothic schools both types occur with almost equal frequency.<sup>1</sup>

In St. Ambrogio the thrusts of the vaulting of the nave are met by heavy cross-walls built over the transverse ribs of the vaulting of the triforium gallery, and these are in turn reinforced by vigorously salient pilaster buttresses against the outside wall. The whole structure is covered by an unbroken gable roof of timber up to the rafters of

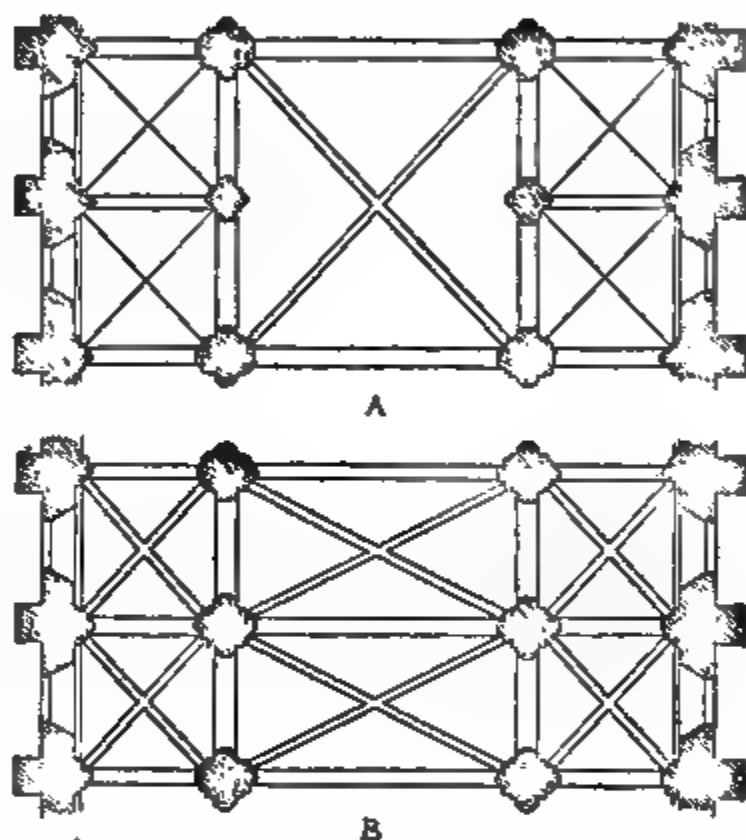


FIG. 14.

which the abutting cross-walls of the triforium are carried. There is consequently no clerestory, and the abutments are effective for their purpose. Great progress in the direction of an organic system is thus manifest in St. Ambrogio. A rudimentary skeleton runs through the whole edifice, though the heavy walls of the ancient types of buildings still remain.

<sup>1</sup> The kind of alternation that occurs in some of the basilican churches, as in St. Prassede of Rome, San Miniato near Florence, St. Michael, Hildersheim, and others, is of a different character and from a different origin. In buildings of this class the alternate arrangement of the piers has no reference to vaulting, and vaulting does not occur. The great piers which are introduced among the columns carry transverse arches with cross-walls built over them, which divide the timber-roofed nave into rectangular compartments. There are usually in such buildings several columns, instead of only one, between every pair of piers.

Beyond this the Lombard builders did not go. The spirit of structural invention here displayed was exhausted before the end of the eleventh century. The native Italian genius, with its classic predilections, reasserted itself more and more as time went on. Some fine monuments of the Lombard type were, it is true, erected during the twelfth century, but they exhibit no new features save such as were probably borrowed from the then growing art of Northern France.

The beginnings of the organic Romanesque in the countries north of the Alps are obscure. Few important innovations in vaulting, and few indications of a new system growing out of such innovations, appear in this region before the close of the eleventh century. Certainly no vaulted nave comparable to that of St. Ambrogio of Milan is known to have been constructed here at so early a time. It is improbable that any of the naves of Northern Europe were covered with groined vaults before the beginning of the twelfth century.

The most important monuments of the grand Romanesque architecture of Rhenish Germany as they now exist, Mayence, Speyer, and Worms, were all erected after this time. In these buildings the Lombard influence is strikingly apparent. Of the structural systems just noticed the alternate is the most prevalent in the Rhenish churches; but while they mainly follow the Lombard models, they exhibit many changes in proportions, and many different adjustments of structural parts, yet they do not develop any new features of a progressive character. The Rhenish architects do not appear to have been inventive builders. On the other hand, important structural elements of the Lombard system are often omitted in their works, as at Speyer, where the groin rib and the buttress are wanting. Hence the Rhenish Romanesque, though a noble architecture, is not important in the sense of having contributed largely towards the formation of the Gothic style; and its many admirable qualities do not, therefore, concern us here.

The Romanesque of Southern Gaul is still less important in any consideration of the sources of Gothic. The provinces bordering on the Mediterranean long retained the artistic traditions of the brilliant Roman civilization of which they had been the seat; and the numerous remains of the extensive and magnificent Roman monuments which had been erected here

naturally supplied the chief inspiration to the builders of this region in the Middle Ages. The principles and leading forms of the mediæval buildings of Southern Gaul are thus essentially Roman, though features derived from other than Roman sources are not wanting. The larger churches, like most others in Western Europe, have a modified basilican plan, with a barrel vault, of either round or pointed section, over the nave, and with smaller vaults, or half-vaults, of the same form over the aisles. The aisles are, in many cases, so high as to preclude a clerestory, and thus their vaults act effectively as abutments to the central vault.<sup>1</sup> The vaulting of naves was more general in this region than elsewhere during the eleventh century; but progressive developments were impossible in connection with the form of vault here used. It is true that vigorous and salient transverse arches strengthen these barrel vaults and divide them into bays, and that these, together with the archivolt, give rise to the use of compound piers similar to those of the Lombard Romanesque; but farther than this it was impossible to go while retaining this form of vault. It may here be remarked that a provincial Roman prototype of this form of mediæval structure occurs in the remains of the Baths of Diana at Nîmes. But with the merits and defects of the Romanesque architecture of Southern Gaul we need not further concern ourselves, because it is mainly a survival of an ancient system, rather than a vital development leading on towards Gothic. The occasional use of the pointed arch as the generating form in the vaults of these churches has, indeed, been regarded by some writers as having a bearing on the origin of Gothic. But the pointed arch thus used has little structural significance, and affords nothing to warrant this view.

Before taking up the more vital Romanesque of the Northern provinces, we must, in order to clear the ground of all irrelevant types, briefly examine two other forms of mediæval architecture that occur sporadically in those parts of Gaul which lie south and east of the Loire. The first of these is represented by only one important building, the Church of St. Philibert of Tournus (Saône-et-Loire), dating from the first quarter of the eleventh century. Here we have a nave covered with a suc-

<sup>1</sup> The barrel-vaulted churches of Southern France are admirably described and illustrated by M. Revoil, *Architecture Romane du Midi de la France*. Paris, 1873.



cession of barrel vaults whose axes are perpendicular to the long axis of the building. They are carried on transverse arches springing from short shafts which rest on great cylindrical columns that support the main arcades and divide the nave from the aisles. The aisles are covered with groined vaults on transverse ribs. Such a system has some advantages. The vaulting of the nave exerts no lateral thrusts, and it admits of openings in the ends of the vaults like those of a clerestory. But it is ponderous and inelegant, and never came into general use. This curious building, as shown by M. Dieulafoy,<sup>1</sup> resembles in its main features certain ancient Persian and Syrian types, and is supposed by this author to have had an important influence on the formation of Gothic by preparing the way for an organic subdivision into bays. Such subdivision as this goes, however, but little way in the direction of the Gothic system.

The other sporadic type, distinctly an exotic, is that of the Church of St. Front at Périgueux (Dordogne) and its offshoots, the churches at Angoulême and Fontevrault, and a considerable group of smaller buildings in Aquitaine. St. Front is a Byzantine structure vaulted with domes on pendentives. The use of the pointed arch in the support of these domes has led some writers to suppose that this monument might be regarded as constituting a step in the direction of Gothic. But the pointed arch as here used has no more structural significance than it has in the barrel vaults of the Southern provinces. The system is identical with that of St. Sophia of Constantinople, except that it lacks those features in which lay the promise of progress, chiefly the domical groined vault, already noticed as occurring in that monument.<sup>2</sup> Hence St. Front and the buildings derived from it have little relationship with the organic Romanesque out of which the Gothic was a natural development.

To these comparatively inorganic types<sup>3</sup> of Southern France and of Aquitaine may be added the mixed form of architecture that occurs in the region lying between the extreme south and

<sup>1</sup> *L'Art Antique de la Perse*, vol. v. p. 165.

<sup>2</sup> For a full description of the Church of St. Front see the admirable work of M. F. de Verneilh, *L'Architecture Byzantine en France*. Paris, 1851.

<sup>3</sup> It is unnecessary for our purpose to notice those types of Romanesque design in which, as in Vignory, and the original nave of St. Remi at Reims, the general forms and the structural arrangements are essentially those of the Christian Roman basilica.

the more northerly provinces, where a different structural system was in use. In the North the groined vault had been almost as exclusively employed from the first as had the barrel vault in the South. But in parts of Burgundy and Auvergne the architectural influences of the North and South meet and give rise to buildings which partake of the characteristics of both — that is to say, buildings in which the barrel vault and the groined vault are used conjointly. This mixed form of structure was carried out in the grandest Romanesque edifice of the Middle Ages, the vast and magnificent Abbey Church of Cluny, which, before the erection of the modern St. Peter's at Rome, was the largest church edifice in the world.<sup>1</sup> In buildings of this class we have a barrel vault over the nave and groined vaulting in the aisles. These aisle vaults, unlike the greater part of those of the Southern Romanesque, are low enough to afford space for a clerestory. This arrangement is illogical and inherently weak, though by heavy walls and vigorous buttressing buildings thus designed were often made to stand. The Church of Cluny might probably have been intact to-day had it not been destroyed by violence during the revolution of 1788; and among the monuments which were similarly constructed two important ones, the Cathedral of Autun and the Church of Paray-le-Monial, have survived. In the Church of Notre-Dame du Port, Clermont-Ferrand, a similar arrangement occurs, save for the addition of a triforium gallery covered with half-barrel vaults which abut the central vault and leave no space for a clerestory.

We may now turn our attention to those Northern types of Romanesque that were the immediate precursors of the Gothic. These are mainly confined to the provinces of Burgundy, Normandy, and the Ile-de-France. Here the principles of the Lombard system reappear, and are carried out with various modifications and progressive changes. The type characteristic of Burgundy is magnificently developed in the nave of the Abbey Church of Vézelay, which dates from the commencement of the twelfth century. Here we have a uniform system with quadripartite vaulting in oblong compartments over the nave, and square vaults of the same kind in the aisles. The system is perfectly organic as far as it is developed; but while vigor-

<sup>1</sup> For a full description of this monument see the work of M. J. Viery, *L'Architecture Romane dans l'Ancien Diocèse de Macon*. Paris, 1892.

ous transverse ribs of two orders separate the vaulting compartments, one from another, and longitudinal ribs span their narrow ends, no groin ribs occur. The absence of the groin rib, and the omission of triforium openings, which here, as in some other Romanesque buildings of the north of France, do not occur, show a somewhat backward character and would seem to indicate a Rhenish influence, though the Church of Laach, the Rhenish monument which Vézelay most resembles, is of somewhat later date. The vaulting is again of the domical or Byzantine type, which adjusts itself as readily to the oblong as to the square plan. The pier has a broad pilaster-like member rising from the pavement and supporting the first order of the transverse rib, while an engaged round shaft carries the sub-order of the same. The longitudinal rib springs from a short rectangular support which rests on the triforium ledge. The ground-story archivolts and the transverse ribs of the aisles, which last, like those of the nave, are of two orders, are carried by supports like those of the corresponding members in the nave. The principles of the Lombard system are thus here applied to a building of the uniform type by substituting for the square vault of the nave an oblong one; and although, from the omission of the groin rib, the design is not so completely organic as that of a typical Lombard edifice, it is carried out with unprecedented precision and elegance. The general proportions and adjustments of the parts mark a distinct advance on Lombard achievement, especially in the greater elevation of the vaults, affording space for a well-developed clerestory. St. Ambrogio of Milan has, as we have seen, no clerestory, while the clerestory of San Michele of Pavia, in the original form of the building, was insignificant. But in Vézelay the clerestory is of ample dimensions, and greatly enhances the general effect of the interior. The exterior of this nave was much changed in appearance within a century after its erection by the addition of flying buttresses. The salient pilaster buttresses, with which alone it was originally furnished, were inadequate, and the subsequent introduction of the flying buttresses was necessary to maintain the stability of the structure. But in other respects the edifice was admirably designed for strength and permanence, as well as for artistic effect.

In no part of Europe during the eleventh century was the

activity in building greater than in Normandy. But the early Norman Romanesque is of the plainest type, in which the primitive provincial basilican characteristics largely persist. Massive rectangular piers with few subordinate members, heavy archivolts, a low triforium if any, and a thick-walled clerestory with small round-headed openings characterize this type. The naves of these early structures were covered with timber roofs only. The Abbey Church of Bernay,<sup>1</sup> in its original parts, illustrates this type. The Church of St. Gervais of Falaise,<sup>2</sup> which dates from about 1050, illustrates a more advanced type, in which the nave is divided more completely into bays. St. Gervais has an engaged shaft in each pier, which rises from the pavement to the top of the wall of the nave. Such a shaft has no necessary function, in an unvaulted structure, though it may be used to carry the trusses of the timber roof. Shafts thus rising to the top of the walls are common in the Norman Romanesque of the eleventh century; and they seem to be a result of unintelligent copying of piers organically composed to carry vaulting — like those of the Lombard builders. The Normans, in fact, though active constructors, seem not to have been altogether logical designers, and not to have fully perceived the significance of the parts in the architectural system from which they appear to have derived their first notions of organic building. This seems to be further shown by the practice, not uncommon among them, of inserting an engaged shaft on the aisle side of the pier, in unvaulted aisles, and prolonging this shaft to the lean-to aisle roof — as in the Church of Notre-Dame-sur-l'Eau, Domfront.<sup>3</sup> In designs like the foregoing the piers are uniform in size and composition, and the great shafts dividing the nave into oblong bays became very common in Normandy, though as yet there was no vaulting except in the aisles.

But while the naves of Norman churches were, before the twelfth century, unvaulted, earlier instances of vaulting over the choir are not wanting. The choir, as has been remarked by M. Ruprich-Robert,<sup>4</sup> being short (rarely at this time consisting of more than two bays), afforded, in the great piers of the crossing and the heavy walls of the east end, secure abutments to the

<sup>1</sup> Ruprich-Robert, *L'Architecture Normande*, vol. i. plate xi.

<sup>2</sup> *Ibid.*, plate xix.

<sup>3</sup> *Ibid.*, plate xxii.

<sup>4</sup> *L'Architecture Normande*, vol. i. p. 71.

thrusts of vaulting. The early Norman builders were consequently less timid in regard to erecting vaults here than they appear to have been in the nave. Among extant Norman choirs that were thus vaulted during the second half of the eleventh century are those of the Abbaye-aux-Dames and the Church of St. Nicolas at Caen, and that of St. George at Bocherville. In none of these vaults do groin ribs occur, though strong transverse ribs are employed in all of them. In the Abbaye-aux-Dames, the compartments of these choir vaults are nearly square in plan, and the vaults are built on the Roman model with elliptical groins and level crowns. In St. Nicolas the compartments are oblong, and the cross-cells have an approximately elliptical section. In the St. George, Bocherville, also the compartments are oblong, and here the vaulting is of the domical form.<sup>1</sup>

The Normans seem to have made no use of groin ribs until they began to vault their naves in the early part of the twelfth century, some time after such ribs had been in use in the neighbouring province of the Ile-de-France. The first vaulted nave appears to have been that of the Abbaye-aux-Hommes at Caen, which was at first constructed with a timber roof early in the second half of the eleventh century. The date of this vaulting has not been ascertained with precision, but its character indicates that it can hardly be later than the first quarter of the twelfth century. It has a form that we have not before met with, which seems to have been suggested by the alternate system here employed.<sup>2</sup>

<sup>1</sup> The vaulting of St. Nicolas at Caen and St. George at Bocherville, I have not examined at first hand. My account of them is based on the work already cited of M. V. Ruprich-Robert.

<sup>2</sup> This alternate system does not appear to have been in use north of the Alps before the second half of the eleventh century. Then, in the Abbey Church of Jumièges, dating from about 1050, and here in the Abbaye-aux-Hommes, dating from 1064, it occurs; and in subsequent Norman buildings it became frequent. There can be little question that this system was, as remarked in the preceding chapter, introduced into Normandy through a direct influence from Lombardy. This has, however, been questioned. M. Ruprich-Robert (*L'Architecture Normande*) maintains the affirmative, basing his argument largely on the work of Dartain (*Étude sur l'Architecture Lombarde*), whose dates for the churches of St. Ambrogio of Milan, and San Michele of Pavia, have lately been disputed. M. Lefèvre-Pontalis (*L'Architecture Religieuse dans l'Ancien Diocèse de Soissons*, etc.) discusses the theory of M. Ruprich-Robert and rejects it on the ground that Dartain's dates are, in his view, untrustworthy, and maintains that the nave of St. Ambrogio is a work of the twelfth century, and hence could not have furnished the model (as M. Ruprich-Robert supposes it to

The builders of the Ile-de-France seem to have been experimenting with the groin rib from the beginning of the century if not before; but they confined their early experiments to vaults of small magnitude. Whether any naves in this province had been covered with ribbed vaulting before the first Norman works of this kind on a large scale were undertaken is uncertain. But apparently no nave so large as that of the Abbaye-aux-Hommes had before been thus vaulted. It was therefore a bold undertaking, in the execution of which the inexperienced

have done) for the Norman structures that we are considering. Sig. Cattaneo, however, has, as already remarked,<sup>1</sup> thrown new light on the origin of the Lombard Romanesque, and especially upon the dates of these two leading monuments. This author shows (*L' Architettura in Italia dal secolo VI al Mille circa*, pp. 210, 211) that Darton has erred, and seems to exhaust the subject of the dates of the various portions of St. Ambrogio — summing up his argument as follows: "Tutte le supposte considerazioni m' inducono a credere, che le navi odierne del Sant' Ambrogio sorgessero nella seconda metà del secolo XI, e l' atrio sul principio del seguente, poco prima del campanile nuovo che, come si sa, data dal 1129. Perciò riassumendo, la più probabile storia dei restauri portati alla celebre basilica penso che sia questa: L' arcivescovo Angilberto fra l' 824 e l' 859 ne allungò la parte superiore, costruendo dai fondamenti le tre abside, e rifece assai probabilmente le antiche navate. L' arcivescovo Ansperto fra l' 868 e l' 881 compì il restauro della chiesa rifabbricandone il quadriportico. Nella seconda metà del secolo XI si riedificarono le tre navi ed il narcece, rispettandosi le absidi di Angilberto; si costruì la cripta, la parte superiore del ciborio, l' ambone, e si ornò il presbiterio di stucchi, mosaici e pitture. Intorno all' anno 1100 si riedificò il resto del quadriportico. Nel 1129 fu inalzato il secondo campanile, e nel 1196 si riparò ai guasti recati all' edificio per la caduta di una volta della nave principale, si restaurò l' ambone danneggiato e si crebbe a nuovo la cupola." Now if we may suppose that the nave of St. Ambrogio dates from the early part of the second half of the eleventh century, we may accept the view of M. Ruprich-Robert that the alternate system of the Abbaye-aux-Hommes of Caen was the result of a direct influence from Lombardy, though not, perhaps, from the Church of San Michele of Pavia, the building thought by him to have furnished the model. This latter church is thought by Sig. Cattaneo (*Ibid.*, p. 211, note) to be mainly a work of the beginning of the twelfth century. M. Ruprich-Robert finds ground for his belief in the fact that Lanfranc, who was abbot of the house in Caen when the church was building, had come from Pavia. This conclusion is not necessarily weakened by the now generally accepted (though still questionable) opinion that the nave of San Michele is a work of the twelfth century. For the earlier church of St. Ambrogio, which exhibits a similar system, is close to Pavia, and must have been well known to Lanfranc. Moreover, it can hardly be doubted that other monuments of the Lombard type had existed in Italy from the early part of the eleventh century, though the naves of such monuments are not known to have been vaulted until a later period. The Church of SS. Pietro e Paolo of Bologna affords, perhaps, an instance. The Lombard derivation of the alternate system of the Abbaye-aux-Hommes may then, it would seem, be considered as pretty well established.

Norman builders may naturally have felt the need of caution. The design of the substructure being substantially like that of the Lombard models, they may be supposed to have originally intended to vault it in the Lombard manner; that is, by square compartments, each embracing two compartments of the aisles as shown at A, Fig. 14, p. 39. In the original work of 1064 the shaft of the intermediate pier, which in the Lombard prototypes had not risen above the triforium, was carried up, like those of the main piers, to the top of the wall. To prepare for the vaulting, these shafts had now to be cut down to a lower level; and the presence of the intermediate shaft may have suggested the expediency, in view of the great height and width of the nave, of springing an intermediate transverse rib from it as a measure of precaution. Such a rib was accordingly inserted, and this rib, by dividing each of the lateral triangular spaces, of what would otherwise have been a square quadripartite vault, into two smaller ones, produced the sexpartite form of vault, which subsequently became an important type in the Gothic system. This vaulting is curiously formed and rudely constructed. Those portions the axes of which lie in the direction of the long axis of the nave have level crowns, as in Roman vaulting; but the groin arches, which on the Roman principle would be elliptical, are segments of less than half-circles. This, of course, somewhat distorts the vault surfaces, while at the springing the segmental groins necessarily form angles with their vertical supports. The lateral cells describe elliptical arches against the clerestory walls, and their axes are necessarily oblique. No longitudinal ribs occur in this vaulting, but for the transverse ribs and the groin ribs the piers as originally designed provide the requisite supports. In order to prepare these piers to receive the ribs of the vaulting, the vault supports of the main piers had to be slightly modified in form, as well as cut down. The needed modification was confined to the pilaster, which was shortened to a level somewhat below that of the springing, and a short shaft on each side of the central vaulting shaft was inserted to carry the groin ribs (a, Fig. 15). The sexpartite vault thus, as it would seem, fortuitously brought into existence, appears to have been the only important innovation made by the Norman builders; unless the rudimentary flying buttress, referred to in the pre-

ceding chapter, be also their invention. With regard to this it may be said that the date of the vaulting of the Abbaye-aux-Dames at Caen, in connection with which such a rudimentary flying buttress was constructed, is uncertain; though it was apparently posterior to that of the Abbaye-aux-Hommes, in the construction of which a half-barrel vault had been used.<sup>1</sup> We

FIG. 15. — System of the Abbaye-aux-Hommes.

shall see, however, in the next chapter, that a similar form of flying buttress occurs in the transitional church of St. Germer in the Ile-de-France, which may be of earlier date; and, since the Norman architects in general showed little structural inventiveness, it is not improbable that the idea carried out in the buttress system of the Abbaye-aux-Dames was derived from the examples of the fertile designers of the Ile-de-France.

<sup>1</sup> Cf. V. Ruprich-Robert, *L'Église Ste. Trinité et l'Église St. Étienne à Caen*, Caen, 1864, p. 37.



The architectural activity of the Ile-de-France during the eleventh century appears to have been less vigorous than that of Normandy. Many buildings were, indeed, erected in this province at this time; but they were generally of moderate, and often small, dimensions and of simple design. The naves were hardly ever vaulted, and even over the aisles vaulting seems to have been rare until the latter part of the century.<sup>1</sup> Of the more primitive type of this region the Church of Rhuis (Oise) is a good example, which retains, for the most part, its original character. In this church only the apse and the easternmost bay of each aisle are vaulted. The plain rectangular piers carry arches of a single order without mouldings, and the walls above are broken only by small clerestory windows. Of the two groined vaults of the aisle compartments now extant but one dates from the time of the original construction, and this is of the Roman form. In buildings of a more advanced character, the archivolts of the great arcades are doubled, and the sub-order has a separate support incorporated with the rectangular pier—as in the Church of Aulchy-le-Chateau (Ainse).<sup>2</sup>

In the still more developed Romanesque of the Ile-de-France, the aisles are entirely covered with groined vaults, the piers are furnished with subordinate shafts, the archivolts are doubled, and the nave, though still having only a timber roof, is divided into bays by engaged shafts and pilasters. The nave of Morienvall (Oise), dating from the second half of the eleventh century, and the much disfigured nave of St. Germain-des-Prés of Paris, in their unaltered portions, illustrate this type. In the vaulted aisles of Morienvall the system is perfectly organic so far as it goes; but since it has no groin ribs, it is comparatively simple. In this system the compartments are oblong, and the vaults, which have been reconstructed, but apparently retain their primitive form, are domical. Heavy transverse ribs divide the compartments one from another, and the pier has four wide pilasters with an engaged shaft on each (Fig. 16).

After this time structural progress in the Ile-de-France became more rapid than it had been before here or elsewhere; so that the final development of the organic Romanesque was

<sup>1</sup> Cf. Lefèvre-Pontalis, *Architecture Religieuse*, etc., p. 41 *et seq.*

<sup>2</sup> Cf. Lefèvre-Pontalis, *Ibid.*, plate xi.

reached here by the beginning of the twelfth century. This final condition may be studied in the Church of St. Étienne of Beauvais. Of the primitive edifice portions only of the nave

FIG. 16. — Morienval.

(Fig. 45, p. 105) remain, and although this nave was several times remodelled in parts during the twelfth century, the character of the original design is clearly traceable. This is most fortunate, since St. Étienne is, with, I believe, only one exception, — that of St. Louis of Poissy, — the only Romanesque structure

extant on the soil of France that was unmistakably designed for ribbed groined vaulting over both nave and aisles. The system is uniform, and the vault compartments are oblong in both nave and aisles, measuring in the nave  $5.75 \times 9$  metres from centre to centre of the piers, and in the aisles  $4.45 \times 5.75$  metres. The easternmost bay of the nave is of the primitive construction up to the clerestory level, while the piers throughout, together with the lower archivolts, also retain their original form, though they have been repaired in parts. The original vaulting of the nave must have been destroyed during the twelfth century, while the existing vaults (of fine early Gothic character) were apparently constructed after a fire from which the building suffered in the year 1180.<sup>1</sup> We are not, however, left in doubt concerning the character of the original vaulting; for the composition of the piers and the existing vaulting of the aisles show plainly what it must have been. Each pier has a pilaster with a central engaged shaft on its face, and a smaller shaft on either side. These members rise from the pavement, and that they belong to the original design is shown by the homogeneous character of the bases on which they rest, and to which they are perfectly adjusted, and by their correspondence with the unaltered work on the aisle side. It is further shown by the high vaulting capitals (*a*, Fig. 45, p. 105), still in place, in the unaltered eastern bay. These capitals are like those of the primitive aisle vaulting, and are of a less advanced type than those which belong to the early remodelled portions of the edifice. That the small shaft on either side of the pilaster was designed to carry a groin rib, is made clear by the fact that its capital is set diagonally in conformity with the direction of such a rib.

Thus we have in St. Étienne of Beauvais, applied to a uniform vaulting system, the completest carrying out of the Lombard idea that had yet been reached in Northern Europe, and one in which all the forms are greatly improved and even reach some degree of elegance. It seems probable that the original vaulting of the nave had no longitudinal rib. Such a rib seems hardly to have been used anywhere in the North

<sup>1</sup> Cf. "Beauvais et ses monuments pendant l'ère Gallo-Romaine et sous la Domination Franque. Par l'abbé Berraud." *Bulletin Monumental*, vol. 27.

so early as this,<sup>1</sup> and the pier includes no member for its support. It was, however, introduced soon afterwards, and its use became general before the second quarter of the twelfth century. In the absence of the original high vaulting, we must confine our further examination of the system of St. Étienne to those compartments of the vaulted aisles in which the primitive structure remains intact. In order to appreciate the advance here made, it may be well to compare the aisle system with that of the earlier nave of Morienvall. In Morienvall (Fig. 16), the groin *a* of the vault, having no rib, rises from the pilaster *b*. The transverse rib *c* rests on the shaft *d*, which is incorporated with the pilaster; while the two parts of the double archivolt *e* are supported respectively by a lateral pilaster and an engaged shaft. To avoid excessive doming in the vault, the transverse rib is slightly stilted, and its supporting shaft is lengthened so as to bring the impost above that of the main archivolts. In St. Étienne (Fig. 17) the presence of the groin rib calls into requisition the additional shaft *a* in the compound pier. The elevation of the crown of the transverse rib is effected, in this case, wholly by stiling, hence the capitals of the system are all on the same level, and the shafts are all of the same length. The groin rib is here of a primitive type, being heavy, and of rectangular section with bevelled edges. The capitals and bases of the shafts that sustain the groins are, as in the nave, set diagonally so as to conform with the directions of those ribs—an adjustment of which the example had been set in the Lombard structures. The remaining compartments of the aisles of St. Étienne have the same general character, except that their groin ribs are lighter, and have a round instead of a rectangular section, while the capitals are of a slightly more advanced design. These last aisle compartments are thus apparently a little later in date. A pause in the works may have occurred after the easternmost bays were completed, or these somewhat later portions may be the result of a very early reconstruction. Other changes wrought during the twelfth century in this most interesting monument, being of a Gothic character, will call for consideration in the following chapter.

<sup>1</sup> In the nave of Vézelay, however, a nearly contemporaneous structure, the longitudinal rib occurs, as we have seen, without the groin rib.

The primitive form and the historic value of the Church of St. Louis of Poissy have been so far destroyed by remodelings and recent reconstructions and restorations as to render a complete understanding of its original character nearly im-

FIG. 17. — St. Étienne, Beauvais.

possible. Hence its precise place among the monuments of the Ile-de-France, that were quickening with the germs of the Gothic spirit, can hardly be determined with fulness. It seems clear, however, that, though subsequent in date to St. Étienne of Beauvais, the earlier portions of it were less advanced in

organic character. These portions are confined to the aisles, and the vaulting here has no groin ribs. Three bays of vaulting in the nave, however, though largely reconstructed, seem to retain their original form. They were probably built immediately after those of the aisles, and they are furnished with groin ribs. In the easternmost two bays these groin ribs are carried on shafts rising from the pavement, while in the third bay they rest on corbels at the impost level. The transverse ribs of this vaulting are of two orders, each one of which has a sustaining shaft in the pier. In the easternmost bays, where the groin ribs also have supporting shafts, the piers are composed of more members than occur in the piers of St. Étienne; namely, one for the sub-order of the transverse rib, one on either side of this for the first order of the same, and one again on either side for the groin ribs. This makes the whole pier very bulky, and it may have been a desire to reduce this bulk that led to the use of the corbels in place of shafts as supports for the groin ribs of the westernmost of these three bays.<sup>1</sup> The small Church of Béthesy St. Pierre, near Morienval, is also worthy of notice as having in its aisles domical groined vaults (Fig. 18) furnished with groin ribs. The compartments of this vaulting are nearly square in plan, and the forms and adjustments of the component arches are curious. In the transverse rib *a*, for instance, the curve is a segment of less than half a circle, while the archivolt, the wall arch, and the groins are semicircular. This makes the crown of the vault *bc*, taken in a line parallel with the long axis, more domical than need be. Why the low, segmental curve in the transverse rib producing this result should have been preferred to a semicircular one is not clear. The designer seems to have gone out of his way to make his vault domical. Taken in the line of the short axis, the crown *de* is rampant, since the archivolt *f* has a shorter span, and hence a lower crown, than the wall arch *g*. The piers are of the most primitive rectangular type, with two orders of pilasters on the aisle side, which, with

<sup>1</sup> The character and date of the Collegiate Church of Poissy are discussed by M. Felix de Verneilh in his work, *Le Premier des Monuments Gothiques*, Paris, 1864, and by M. Anthyme Saint-Paul in "Viollet-le-Duc et son Système Archéologique," published in the *Bulletin Monumental*, 1880-1881.

responds of corresponding form, sustain the transverse and diagonal ribs.

Few other vaulted Romanesque structures have survived in the Ile-de-France. After the beginning of the twelfth century, the transition into Gothic was here so rapidly accomplished that the larger structures of the early decades of this century cannot be classed as Romanesque. Our examination of the

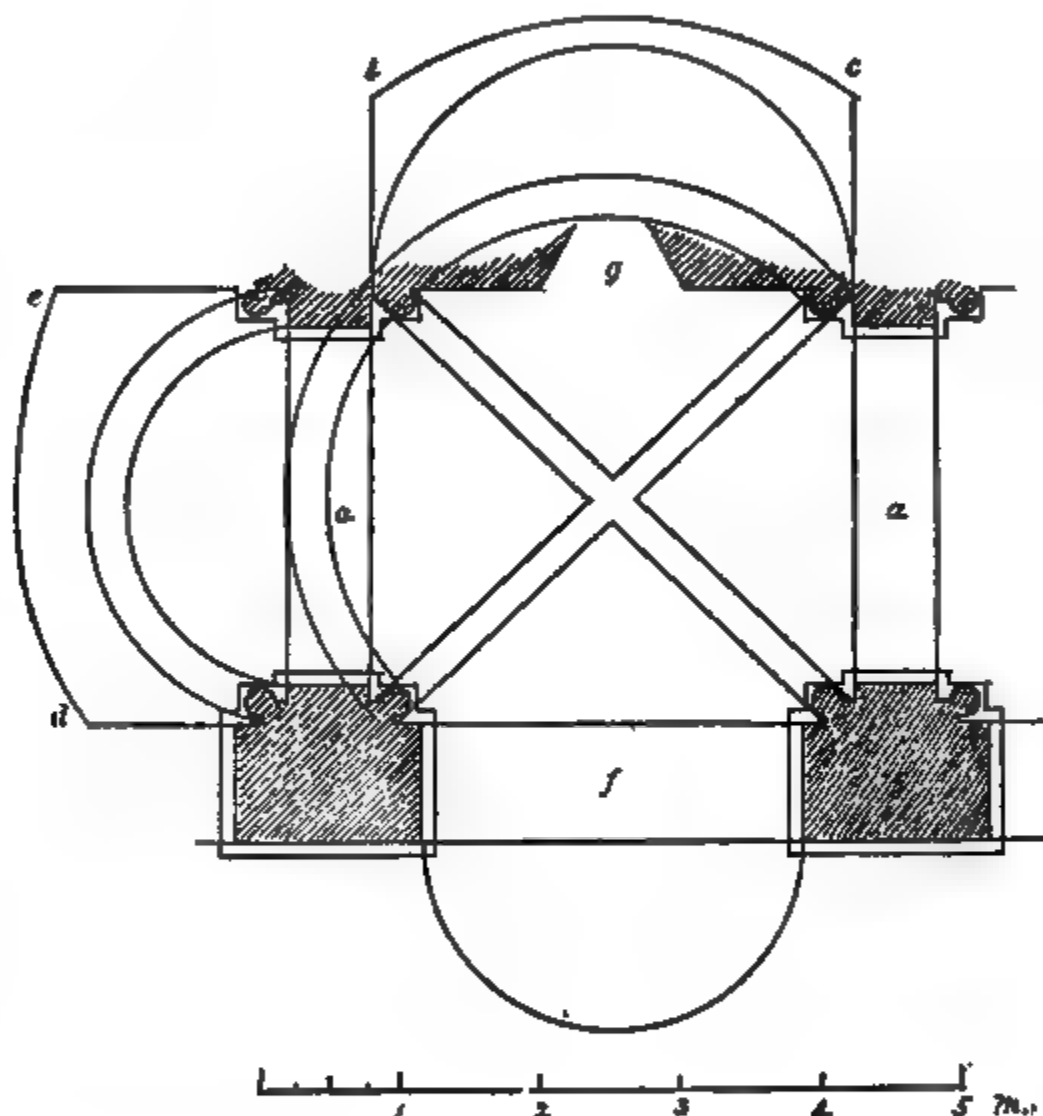


FIG. 18. — Aisle Vault of Béthesy St. Pierre.

sources of Gothic, therefore, ends here, while we proceed, in the next chapter, to consider the transitional and early Gothic developments.

It may here be well to define the sense in which the term transitional, as distinguished from Romanesque, on the one hand, and early Gothic, on the other, is used. Broadly speaking, the organic Romanesque, of all varieties and from first to last, is, as we have seen, an architecture of transition. In a more specific sense, what we mean by the transitional architec-

ture of the Middle Ages is that in which the pointed arch, in connection with ribbed vaulting and a functional memberment of supports, first appears. The term transitional, in this sense, is applicable until the concentration and counteraction of thrusts, and the consequent equilibrium of the structure (latent, but undeveloped, in the Romanesque) are fully worked out, and the system stands forth in its essential completeness. The fullest development of the Romanesque, as such, was reached in the vaulted nave of St. Étienne of Beauvais. The further innovations of the early twelfth century constitute the architecture of transition.



## CHAPTER III

### GOTHIC CONSTRUCTION IN FRANCE

#### I. THE BEGINNINGS OF GOTHIC

By France, in this chapter, and indeed throughout this book, is meant the France of the twelfth and thirteenth centuries, that is, the Royal Domain of the Capetian Dynasty and portions of a few contiguous provinces, chiefly Champagne, Orléanais, Picardy, and Burgundy. To this region the early Gothic movement was confined. Indeed, the region of its earliest manifestations was circumscribed by even narrower limits, those, namely, of the Ile-de-France, or the area of which the larger part is now included in the departments of the Seine and the Oise. Though many of the monuments of the early Gothic art have perished, many others yet remain, and the beginning and course of development of the new style may, by examination and comparison of these existing buildings, be made out with substantial correctness, without reference to other sources of information, which, in fact, hardly exist; for such written records of building as have been preserved are wholly devoid of information respecting architectural forms and methods of construction. We are compelled, therefore, to rely upon independent study of the buildings themselves.

We have seen that the last step in organic building that can be called Romanesque was reached in the nave of St. Étienne of Beauvais. Before further advance could be made it was necessary that some better means of diminishing, of concentrating, and of counteracting the thrusts of vaulting should be found. Such means were, as before remarked, at length discovered in the use of the pointed arch, together with a new adjustment of the ribs and a new form of abutment. It has, until recently, been commonly thought by continental writers that the earliest extant instance of the incipient Gothic style is found in what remains of the Abbey Church of St. Denis, as it

was built under the administration of the Abbot Suger. This, however, is not the case; for not only have we in the much earlier Abbey Church of Morienval an instance which exhibits, though in a halting manner, some of the principles that are carried out with such remarkable skill in St. Denis, but a considerable group of early buildings have survived in which various intermediate steps of progress may be traced.<sup>1</sup>

The first step in the final transformation of the Romanesque into the Gothic style appears to have been taken in the rudimentary apsidal aisle that was added to the Church of Morienval at the end of the eleventh or the beginning of the twelfth century. The vaulting system of the nave aisles of this interesting church has already been described in the preceding chapter, but the aisle we have now to consider presents new features of great importance. It has four compartments of vaulting, which are provided with diagonal ribs, pointed archivolt,<sup>2</sup> and imperfectly pointed transverse arches. Of these transverse arches, however, in the compartment that I have chosen for illustration, one has no rib, while the other has a much stilted and very heavy round one. The diagram (Fig. 19)

<sup>1</sup> Some of these buildings were faithfully described long ago by M. Woillez (*Archéologie des Monuments Religieux de l'Ancien Beauvais*, etc. Par le Dr. Eug. J. Woillez. Paris, 1839-1849), but their dates, relationships, and structural principles were little understood at that time; and little attention of a fruitful kind was drawn to them by the admirable work of M. Woillez. More recently these, and many other buildings of like character, have been made the subject of careful examination and comparison by a highly competent writer on mediæval monuments, M. Eug. Lefèvre-Pontalis, whose admirable work, already referred to (p. 46, note), is all that can be desired in the way of clear and accurate description. But the illustrations to this work, though admirable as far as they go, leave, in common with most books which aim to describe buildings, much to be desired, since they do not completely exhibit the structure of each monument represented, which can be done only by giving in each case at least three projections, — plan, cross-section, and longitudinal section.

<sup>2</sup> Three of these archivoltas are pointed and one is round. The report of the *Congrès Archéologique de France* for the year 1877 thus alludes to this apse: "Nous voudrions aussi dégager de l'époque ogival certains églises où, malgré l'ogive et même la nervure, on trouve dans les moulures, dans les colonnes ou dans quelques dispositions générales, des formes qui rappellent par trop encore soit le XI<sup>e</sup> siècle, soit les premiers rudiments de la transition. Le chœur de l'église de Morienval mérite à cet égard d'être cité tout le premier: la nervure et l'ogive avaient été fort peu pratiquées lorsqu'il fut construit, et peut-être, ou plutôt selon toute probabilité, c'est là que les habitants du Valois virent pour la première fois ces germes féconds d'un nouvel art de bâtir."

illustrates the form and the structural members of this vault,<sup>1</sup> which is marked *a* on the reduced plan of the apse given at A. It will be seen that the narrow archivolt *a* in the plan B, whose elevation is given at *a'*, is pointed in order to bring its crown up to nearly the same level as that of the wider-spanned round arch *b*, whose elevation is given at *b'*; and that the transverse arch *c*, situated at *b* in the plan A, is more acutely pointed for the same reason; while the transverse arch *d* assumes the form of an

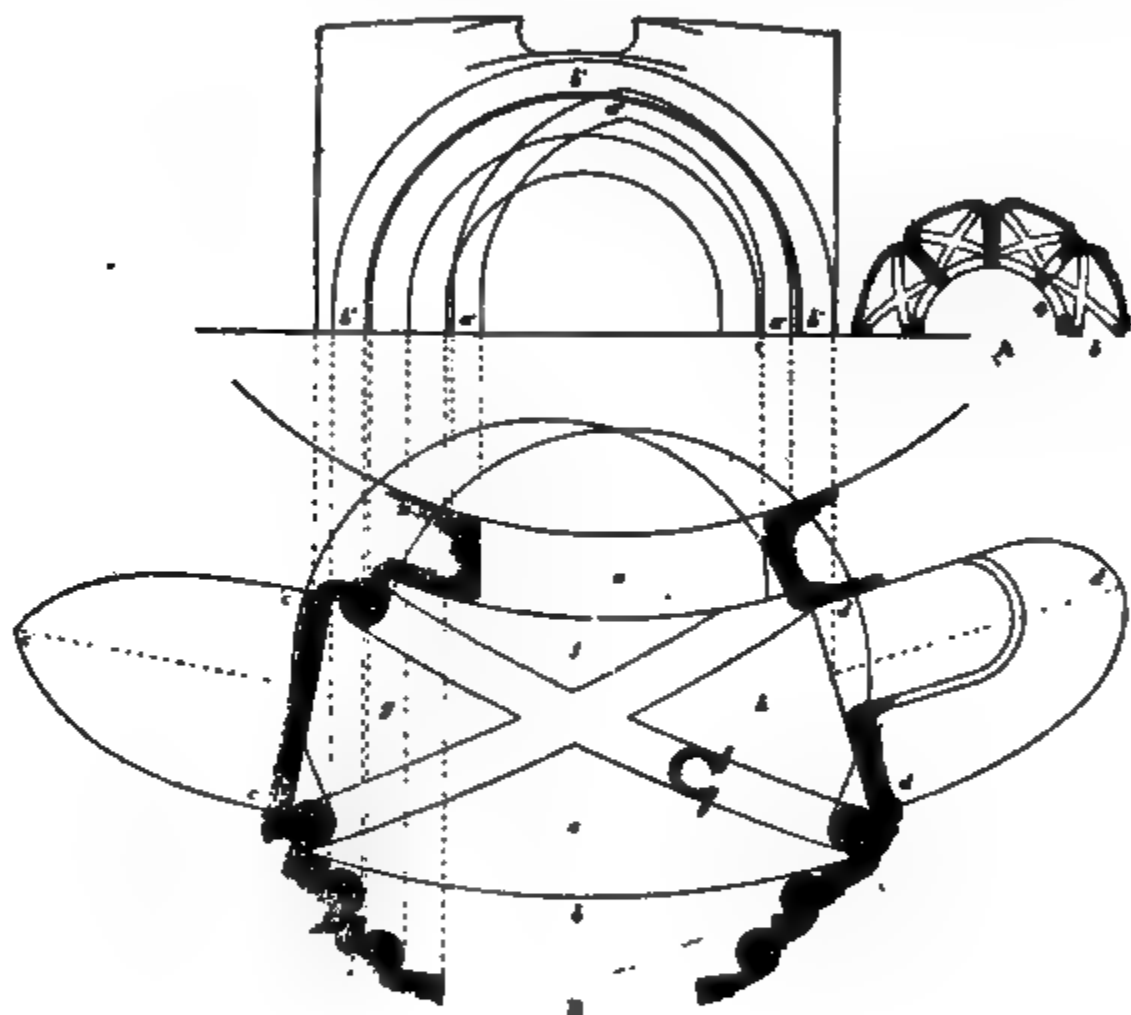


FIG. 19.

irregular ellipse. That structural exigencies alone led to the use of the pointed arch there can thus hardly be a doubt, and this is further manifest from the distorted shapes of the arches *c* and *d*. These distortions clearly result from the position and the form of the longitudinal ridge of the vault. This ridge has to pass through the point of intersection of the diagonals, and to follow the curve of the apse. The point of intersection is not midway between the inner and outer sides of the compartment, but is,

<sup>1</sup> I am indebted for this diagram to Mr. G. F. Newton, who kindly took the pains to go for me from Paris to Morienval, and secure the data which my own notes had not fully included.

as shown in the diagram, considerably to one side of the centre; and thus the crowns of the end arches, which are necessarily in the line of the ridge, are brought to one side rather than over the centres of their bases. The curved form given in plan to the diagonal ribs seems to show an effort to avoid the extreme one-sided position of the longitudinal ridge which would have resulted had they been straight. The natural way to construct such ribs would be in planes giving straight lines on the plan; but this would have made the inequality of magnitude in the transverse cells *e* and *f*, great even now, much greater than it is. The builders wished to diminish this inequality as much as possible, and hence, apparently, they curved the diagonals as much as they dared; but, since the curved plan renders them more difficult to construct, and less secure when completed, they did not dare to curve them much. We shall meet with this curved diagonal rib in other early apsidal vaults, for the builders did not yet see that, on the new principles which they were developing, the intersection of the groins could be placed in the centre of the vault without curving them. More experience soon enabled them to increase the curve so as to bring the intersection nearer this centre, until, at length, after a variety of adjustments of curved diagonals the final Gothic form, in which the curve disappears, was reached.<sup>1</sup>

It will be noticed that the inner branch of the heavy transverse rib has to penetrate the wall at the impost in order to rest on the column that supports the main archivolts. This, of course, carries its crown inward beyond the axis of the vault, a circumstance which may have had some influence in causing the one-sided position of the longitudinal ridge. That is to say, it may have been from this cause, rather than from caution against excessive curvature in the diagonal ribs, that the ridge was brought so far to one side. But this ridge is not placed so far inward as the transverse rib would naturally carry it; and a curious evidence of effort to reduce to a minimum the distortions that necessarily result from the fact that the crown of the transverse rib is not in a line passing through the inter-

<sup>1</sup> It is possible that the idea of the curved groin in this early ribbed vaulting of apsidal aisles was partly derived from the groins of annular groined vaults without ribs, like those of Clermont-Ferrand, where the curve necessarily results from the forms of the interpenetrating surfaces.

section of the diagonals, and concentric with the axis of the aisle, is shown in the adjustment of the arch of the vault to this rib. Had the crown of the vault surface been made to coincide with the crown of the extrados of the rib, it would have carried the longitudinal ridge still further inward than it actually is, or else it would have broken the line of the ridge in a very awkward manner. This result was avoided by allowing the rib to be embedded at the crown, while the ridge of the vault is kept in the line passing through the intersection of the diagonals. These awkward forms, especially that of the end arch *c*, are so plainly the result of a groping struggle with the difficulties of vaulting a curved oblong area, that they seem to show beyond question that the pointed arch was not introduced from æsthetic preference, but that it was naturally evolved in the course of constructive experiment. When the idea of its utility was fully grasped, means of avoiding unsightly distortions were soon found, and its value from an artistic point of view was promptly recognized.

The interest of the vault of Morienvall lies chiefly in this experimental embodiment of new principles as yet imperfectly apprehended. The idea of the structural use of the pointed arch, in connection with an independent system of ribs as a framework for vaulting, was here taking form in the minds of the builders. Incomplete and awkward as is the system thus tentatively worked out, we have in this monument a type of vault construction such as had been before unknown; a type that already contains some of the most important principles of Gothic vaulting. The apse of Morienvall may therefore be regarded as the first step known to us in the distinctly Gothic development of France. The full value, and far-reaching consequences, of what was here rudely accomplished were not at once recognized, but everything was sure in time to follow after such a beginning. Figure 20<sup>1</sup> gives a perspective view of this vault as seen from within the choir.

The initiative of Morienvall seems not to have been immediately followed to any considerable extent; and of other extant buildings nearly contemporaneous with its apse, only a few can be regarded as constituting links in the chain of structural progress.

<sup>1</sup> Figure 20 is from a photograph kindly furnished me by M. C. Enlart of the École des Chartes, Paris.

The aisle vaulting of the neighbouring Church of Béthesy St. Pierre, for instance, which was constructed apparently at about the same epoch, is, as we have already seen (p. 55), Romanesque rather than transitional Gothic. For while the profiling of the vault ribs is of a slightly more advanced character, no innova-

FIG. 20. — Apsidal Aisle of Morienvall.

tions on Romanesque principles of vaulting occur. The same may be said of the diminutive Church of Noel St. Martin, near Villeneuve-sur-Verberie (Oise). The vaulting in this case, however, has one feature worthy of notice that does not appear in either Morienvall or Béthesy, namely, the longitudinal rib. This member (which exists, as we have seen in the Lombard vaulting of St. Ambrogio of Milan) does not occur in any other

of the French constructions thus far considered. The portion of this interesting monument which here concerns us is the east end only, — which is covered with a single quadripartite vault on an oblong plan. The arches of this vault are all round except the one on the western side of the compartment — which appears to be an alteration of a later epoch, and belongs to the developed Gothic vault which covers the area over the crossing of the nave and transept. There is hence nothing here of a transitional character, though, together with Béthisy, it has been recently cited by so high an authority as M. Louis Gonse<sup>1</sup> among other supposed transitional buildings.

Among the truly transitional buildings nearest in date to Morienvall, the first in importance is, perhaps, the nave of the village church of Bury, near Creil (Oise). We have in Bury a more systematic use of the pointed arch, which exhibits progress, while, at the same time, the signs of inexperience and uncertainty are still apparent.<sup>2</sup> The system is uniform with quadripartite vaulting, the compartments of the nave being square, or nearly so, while those of the aisles are necessarily of oblong rectangular form. The aisle vaults are especially noteworthy. Their arches are all pointed, and all except the wall arch are provided with ribs. The transverse ribs are excessively heavy and resemble those of Morienvall, though a shallow gorge, instead of a bevel, is worked on their edges. The oblong form of the compartment gives great inequality in the spans of the arches, but the ends of the cells of the vault, which would naturally under such conditions differ greatly in altitude, are brought to a common level in a curious manner. The end of the further cell (Figs. 21 and 22) does not follow the extrados of the transverse rib, which is here also an archivolt of the transept, but its crown is raised considerably higher, giving a lancet form, and leaving a portion of the transept wall over the rib exposed to view; while the nearer transverse rib (whose extrados is oddly rounded off at the top) is much stilted and loaded with vertical masonry composed of rudely cut *voussoirs*. In this

<sup>1</sup> *L'Art Gothique*. Paris, 1890.

<sup>2</sup> The date of Bury is thought by M. Lefèvre-Pontalis (*"Étude sur la date de l'Église de Saint-Germer," Bibliothèque de l'École des Chartes*, vol. xlv.) to be certainly posterior to 1125. It can hardly, however, be much later than this; for the longitudinal rib is still wanting in its vaulting, and the profiling and execution are of a very primitive character.

rough way the crowns of the narrow arches are brought to nearly the same level that is reached by those which span the longer sides of the vault.<sup>1</sup>

The rounding off of the crown of the arch of the vault itself, a repetition of the form given to the crown of the arch of the narrow cell of Morienvall, looks like a survival of the Roman-

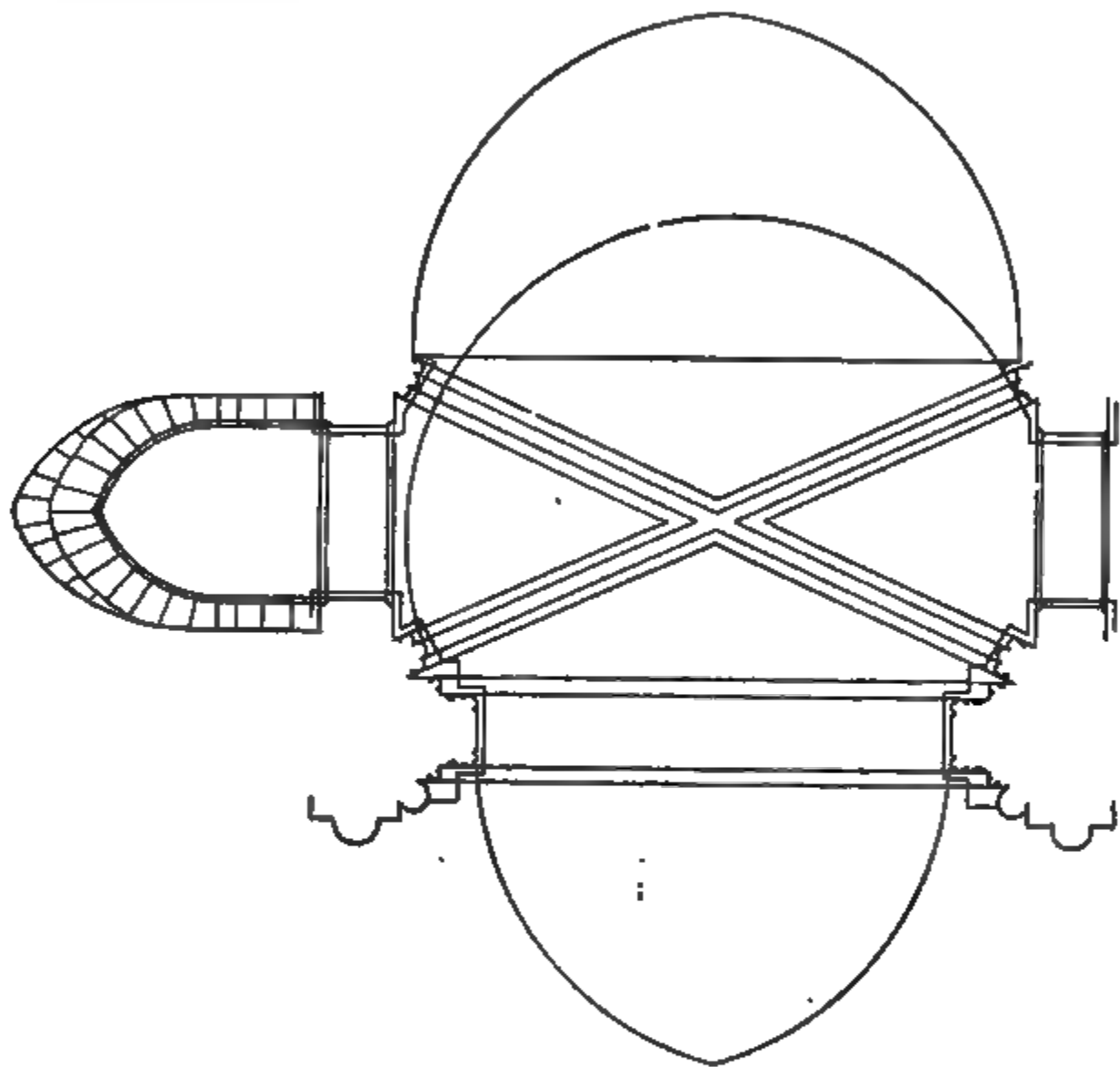


FIG. 27.

<sup>1</sup> In the first edition of this book it was mistakenly affirmed that early Gothic vaults are always much domed because the groin arches naturally reach to a higher level than the other arches of the vault. This has been generally maintained, and even so trustworthy a writer as M. Lefèvre-Pontalis makes, in his recent admirable work, *L'Architecture Religieuse*, etc., p. 106, the following statement: "Pendant quelque temps encore la clef des doubleaux fut toujours placée beaucoup plus bas que celle de la croisée d'ogives." Not only, however, have the aisle vaults of Bury the form described in the text, but even in Morienvall the side arches are but slightly lower than those of the groins, while in the choir of St. Germer, as we shall presently see, the crowns of all the vaulting arches are on about the same level; and it would be easy to cite many other instances of the same form of vault in buildings of this epoch. But while this is often the case, it is also true that the vault surfaces are invariably arched more or less from rib to rib, and their ridges are never quite level.



esque habit<sup>1</sup> — as if the builders could not readily bring themselves to accept the perfectly pointed form. The extrados of the great archivolt, being of two orders, rises above the level of the intersection of the diagonals, the same altitude is given to the arch against the wall, and hence the ridges of the cross-cells

FIG. 22. — Bury, Vaulting of the Aisle.

<sup>1</sup> Another, and apparently much earlier, instance of the same treatment of the narrow cell of an oblong vault occurs in the Romanesque Church of Chatel-Censoir (Yonne) figured by M. Enlart in his instructive pamphlet entitled *Notes sur les Sculptures exécutées après la pose du XI<sup>e</sup> au XIII<sup>e</sup> Siècle*. Paris, 1895. The vaulting here has no groin ribs, and the general character of the work is that of the eleventh century. If this vault be a part of the original construction, it affords an instance of the approximation to the form of the pointed arch antedating that of Morienval.

rise from the centre of the vault to the crowns of the archivolt and longitudinal wall arch respectively, instead of descending from the centre as they generally do. Though the longitudinal rib is still lacking, and the whole construction shows in experi-

FIG. 23. — Bury, Vaulting of the Nave.

ence, this vault marks an advance on Morienval. In the nave (Fig. 23) we have the general scheme of St. Étienne of Beauvais repeated with pointed arches in the vaulting—even the groin ribs being pointed.<sup>1</sup> This is apparently one of the earliest

<sup>1</sup> The groin ribs, as well as the transverse ribs, are not seldom pointed in very early, as well as in later, Gothic vaults.

extant vaulted naves of transitional character. The great transept arch of two orders, like the corresponding arch in the aisle vault, is not stilted, but its crown is built up by superimposed masonry, laid in the manner of *voussoirs*, and tapered off to nothing on the haunches, to a more pointed form with which the surface of the vault conforms; while the nearer transverse rib is stilted, and the vaulting here is fitted accurately to its extrados. The longitudinal rib is again omitted, and the form of the vault differs only in its pointed arches from the Romanesque vault. This constitutes, indeed, a considerable difference, but other important changes were yet to be made before the distinctively Gothic form of nave vaulting could be produced. The pointed arches here, however, greatly diminish the thrusts and give a new expression to the whole interior.<sup>1</sup> The nearly contemporaneous Church of Cambronne affords another instance of a transitional vaulted nave. It does not, however, much differ in essential points from Bury, though its piers are more simple in composition, having no pilaster incorporated with the vaulting shafts. Another construction of this epoch in which the vaulting closely resembles that of the nave of Bury is the gallery over the porch of the neighbouring Church of St. Leu d'Esserent. Here the transverse ribs, of two heavy orders, are loaded as in the aisle of Bury, to raise the surface of the vault and give it a more acutely pointed form. The masonry of the load is roughly laid with irregularly inclined beds, as shown in Fig. 24. These vaults are very irregular in form, but this irregularity is apparently not yet governed by any principle; it is the result, rather, of inexperienced workmanship. In one cell a sharply pointed arch is traced by the vault against the enclosing wall, while in another the form of the arch so traced is nearly segmental. A more advanced instance of vaulting occurs in the small Church of Berzy-le-Sec (Ainse) near Soissons. A nearly square vault adjoining the half-domed apse of this church has a full system of ribs—transverse, diagonal, and longitudinal. The transverse and longitudinal ribs are pointed, but not enough so to raise their

<sup>1</sup> M. Lefèvre-Pontalis (*L'Architecture Religieuse*, etc. p. 204) thinks that the nave vaulting of Bury was added *après coup*. If this be so, it matters little; for if not as early in actual construction as the rest of the system to which it is adjusted, it is manifestly as early in idea.

crowns to the level of the intersection of the diagonals, and hence, as there is no stiling, the vault is very domical in form. The presence of the longitudinal rib, together with a considerable degree of skill and precision of workmanship, seems to mark this construction as posterior to the others thus far noticed, and we may regard it as illustrating a slightly more advanced stage of progress. That it is subsequent to Bury, yet not far removed

FIG. 24. — St. Leu d'Esserent.

from it in date, would appear from the character of its profiling, as well as from its greater mechanical perfection.<sup>1</sup> Still another of the small monuments quick with the germs of Gothic life that belong to the early decades of the twelfth century is the curious and puzzling choir of St.-Martin-des-Champs in

<sup>1</sup> I do not profess to establish the chronological order of these very early buildings with any absolute sureness. The precise order is very uncertain; but while it is so, an illustration of the general progress of Gothic development may be none the less correctly gathered from them.

Paris.<sup>1</sup> It exhibits, together with very primitive groin vaults, separated by heavy transverse ribs, in the aisles, a celled apsidal vault on ribs which may very possibly be the earliest rudimentary instance of that form of apsidal vaulting which ultimately became one of the most magnificent features of Gothic design. Prior to this the apse had hardly been covered in other than the ancient manner—that is, with a half-dome. At Berzy-le-Sec, before mentioned (p. 68), this half-dome has two salient ribs converging on the crown of the transverse rib of the adjoining rectangular vault. These ribs have no necessary structural function, and their presence seems inexplicable unless it may be supposed that they were introduced in order to harmonize the half-dome with the ribbed groined vault of the rectangular compartment. But here in St.-Martin-des-Champs they were used structurally to divide the apsidal vault into the three gore-shaped cells (Fig. 25). These cells have rounded sections, are but slightly developed, and their crowns fall away from the centre of the vault almost as steeply as the surface of a half-dome; but they constitute a new departure and lead to a rapid transformation of apsidal vaulting. Doubtless others of the many small churches that are still numerous in the provincial towns and small villages of the Ile-de-France may be found to show progressive features akin to those already noticed; but hardly any further advance of importance can be looked for in buildings on a small scale.

The earliest extant building in which the new system is considerably developed appears to be the Abbey Church of St.-Germer-de-Fly, near Beauvais. This remarkable church, which is exceptionally harmonious in style throughout, having been entirely constructed during the twelfth century and very little altered, remains to-day substantially intact. It is a church of considerable magnitude, and its erection evidently called forth the best artistic capacity, constructive ingenuity, and mechanical skill, of a time when, with enlarging resources, the creative imagination was stimulated by a growing recognition of the possibilities of the new principles, and by an eagerness to produce enduring monuments worthy of the beliefs and aspirations

<sup>1</sup> For a full account of this apse see the "*Étude sur le Chœur de l'Église de St.-Martin-des-Champs à Paris*," by M. Lefèvre-Pontalis. *Bibliothèque de l'École des Chartes*, vol. xlvii.

of the builders. A comparison of this work with that of other buildings of the same region dating from the first half of the twelfth century seems to justify the belief that the east end of it was erected not much later than the year 1130.<sup>1</sup> We may begin our examination of this most instructive monument with what is certainly the earliest part of it,—the vaulting of the apsidal aisle. Here we find a great advance on the

FIG. 25. — Apse of St. Martin-des-Champs.

apsidal aisle of Morienvall. The scale of the work is much larger, and the marks of groping experiment and executive awkwardness, so conspicuous in Morienvall, are but slightly apparent. The vault and its supporting members exhibit a surprising degree of constructive knowledge and of mechanical skill in the use of new forms, as well as power in beautiful

<sup>1</sup> M. Eug. Lefèvre-Pontalis, "Étude sur la Date del' Église de Saint-Germer," *Bibliothèque de l'École des Chartes*, vol. xlv. p. 492, says: "Nous croyons pouvoir fixer l'époque de sa construction d'une manière très précise entre les années 1130 et 1150." He then produces evidence in favour of the earlier date.

architectural design. Was this the first apsidal vault constructed after that of Morienvall? The question may not be answered. It would seem, however, that more than one experimental structure must have intervened. It is hardly conceivable that a composition so beautiful and so perfect should have been produced without many previous trials; but no earlier

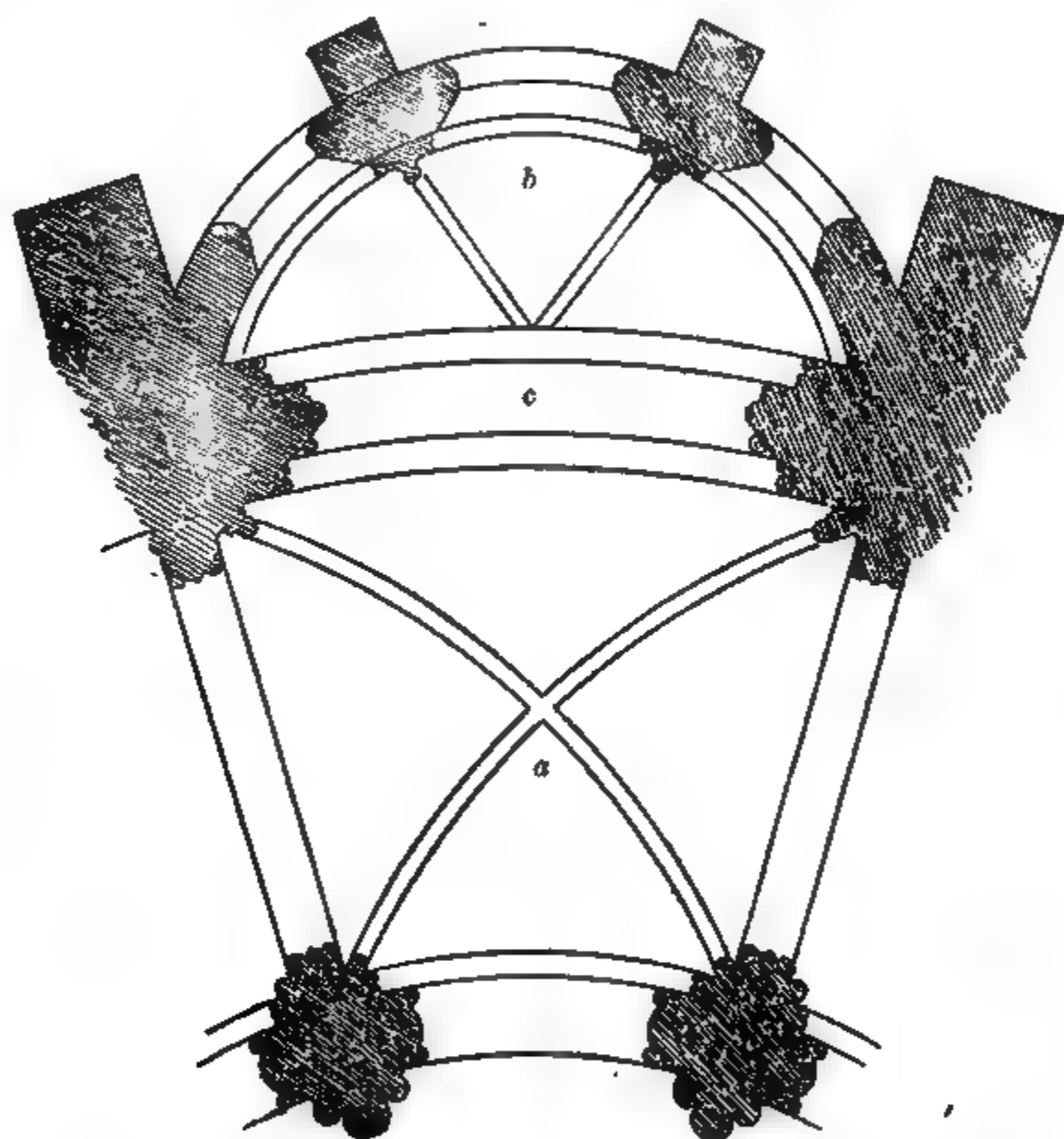


FIG. 26. — St. Germer-de-Fly.

vaults of the kind seem to have survived. It therefore appears safe to suppose that after Morienvall we have in St. Germer the oldest existing apsidal aisle vaulted on the rudimentary Gothic principles. In this vaulting (Figs. 26 and 27) we find a complete system of ribs, in which few distorted lines or awkward adjustments occur, sustaining a slightly domical vault of elegant form. The diagonal ribs still follow, in plan, the curved lines that are naturally produced by the cross-penetrations of an annular

groined vault, though the form here, as in Morienvall, differs in other respects from that of a geometrically generated vault—as will be explained farther on. The intersection of the diagonals is now at or near the centre of the compartment (*a*, Fig. 26), the inner side of the transverse rib is not embedded, as in Morienvall, at the impost, and each rib has its own supporting shaft in the compound piers and responds, except the inner

FIG. 27. — Apsidal Aisle of St. Germer-de-Fly.

branch of the diagonal which rests on the capital of the shaft that carries the transverse rib. The small chapel which opens out of this bay, seen in the illustration (Fig. 27) to the left of the further respond, is worthy of notice as having a vault somewhat resembling that of the apse of St.-Martin-des-Champs, while it shows some advance on that design. In plan (*b*, Fig. 26) it is a segment of less than half a circle, and the vault is divided into three cells by two ribs converging on the crown of the arch that separates the chapel from the aisle. This vault is rendered



less domical than that of St. Martin by the stiling (Fig. 27) of the wall arches. These wall arches still, however, retain the semi-circular form, and the window opening is likewise round arched in the plainest Romanesque manner. These primitive features, together with the curved plan of the diagonal ribs in the aisle compartment, and the robust, though not inelegant, proportions of the whole design, appear to justify the belief that the work is anterior to that of St. Denis; and thus an important link in the chain of structural progress leading from Morienvall to the work of Suger.

Passing into the choir, the eye is met by what we have good reason to believe was the first great Gothic apse (Plate I) ever

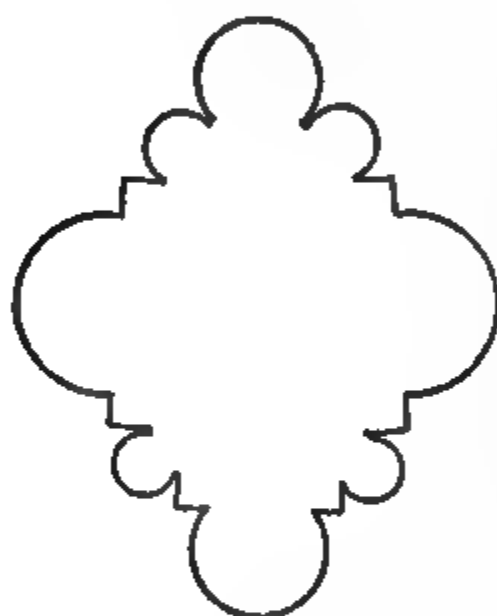


FIG. 28.

constructed. Its lofty vaults, its stately piers, and its superimposed arcades combine to produce an impression of great beauty. The vault of this apse is divided into five cells by strong and richly ornamented ribs that converge on a centre against the crown of the transverse rib of the adjoining rectangular vault of the choir. The wall arches (of unusual thickness because the clerestory wall is thinner than the wall beneath) are stilted and pointed, and their crowns rise to a height a little above that

at which the converging ribs meet. Thus the domical form of the vault as a whole, which is so excessive in St.-Martin-des-Champs, and is still so considerable in the apsidal chapel of this same building just noticed, is avoided. But the crowns of the cells are slightly arched, and their surfaces are in all parts sensibly domical. The Gothic apsidal vault is thus already developed here with substantial fulness. The piers of the apsidal system are, on the ground story, composed like those of the apse of Morienvall, with the addition of three shafts for the high vaulting. They each consist of a core composed of square-edged members, the whole having a wedge-shaped section with curved inner and outer sides conforming with the curve of the apse, and engaged round shafts to support the various archivolts and vaulting arches (Fig. 28). The ground-story members are

crowned by a group of capitals, but the high vaulting shafts rise unbroken to the springing of the vaults. The abaci of these capitals conform in plan with the trapezoidal section of the pier (Fig. 29), and thus a conoidal or a twisted intrados, which would result in the archivolt from the use of the square abaci, is avoided.<sup>1</sup> The main vaulting shafts are proportioned in size to the ribs which they respectively support, they are compactly grouped, and are banded by the triforium string, and again at the level of the abaci of the triforium capitals. This banding gives a sense of secure incorporation with the pier, and is, at the same time, pleasant to the eye. The wall ribs are stilted by small shafts resting on the clerestory string, but owing to the great size of the converging ribs, against which they are closely placed, they do not fall directly upon the corresponding members in the sustaining shaft group below. The clerestory string is of unusual character, consisting of a projecting ledge carried on corbels, and forming the abaci of the capitals of the smaller vaulting shafts (Fig. 32, p. 80).

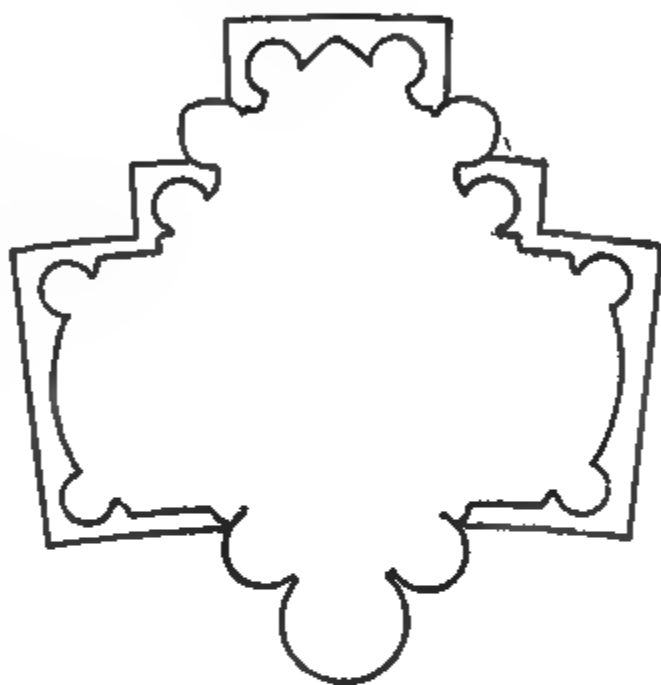


FIG. 29.

The vaulting system of St. Germer is uniform throughout. The compartments are oblong, and the execution is skilful in all parts. The vaults have the perfectly Gothic form which will be explained farther on, though the ribs are unusually heavy. In the choir (an exceptionally short one, having but a single bay) the eastern branches of the diagonal ribs are not provided with supporting shafts, but are carried on corbels fashioned into the forms of bullocks' heads, and placed just above the impost of the transverse rib (Fig. 30). This is an awkward arrangement, though it is at the same time an interesting instance of the manner in which structural difficulties were frankly over-

<sup>1</sup> Cf. Viollet-le-Duc, *s.v.* *Voute*, p. 490. The impost of the apse of Morienval has the same trapezoidal form, and it is frequent in Gothic apses of all epochs.

come by the readiest and least objectionable means. To have introduced an additional shaft for the support of this rib would have given an unsymmetrical form to the pier, which would have been still more awkward. In later Gothic designs the apsidal vault ribs do not, as we shall see, converge on the crown of the transverse rib of the choir, but on a point farther eastward. An additional rib is then inserted on each side, springing from the easternmost piers and abutting the thrusts of the other ribs. In such cases a shaft is inserted to carry the additional rib, and a corresponding shaft on the opposite side carries the groin rib of the choir vault, which is here carried on a corbel. In other early systems, where the apsidal vaulting is designed like this of St. Germer, the easternmost choir vault is made tripartite (as will be explained farther on), as in the Cathedral of Noyon. When this is the case, no groin ribs, of course, have to be provided for in the easternmost pier, and no awkwardness of arrangement is produced. Throughout the rest of the building the diagonal ribs are supported on separate shafts rising from the pavement.

FIG. 30. — St. Germer.

It is especially worthy of notice that these vaults of St. Germer, the earliest Gothic vaults on a large scale, have the oblong form with the crowns of all their sustaining ribs at nearly the same level. We shall find this to be the case frequently, though (as already remarked, p. 65, note) it has gener-

ally been supposed that these characteristics belong exclusively to the more advanced stages of Gothic construction.

St. Germer has a vaulted triforium gallery — apparently the first (in Gothic buildings) of that series of such galleries which assume their grandest development in the Cathedral of Paris. This feature is, of course, derived from Lombard and Norman Romanesque monuments such as St. Ambrogio of Milan and the Abbaye-aux-Hommes at Caen. Here, curiously, it retains

FIG. 31. — Triforium Gallery of St. Germer-de-Fly.

the Romanesque form in all its structural parts. Its groined vaulting is of the most primitive type derived from the Roman models with the addition of strong transverse ribs separating the compartments from one another, as shown in Fig. 31. But the internal openings (as shown in the general view of the apse, Plate I), though round arched, are in other respects of early Gothic character. They are each divided by coupled shafts into two smaller openings spanned by a larger arch, and their tympanums are pierced each with a circular opening, in some cases cusped, in others variously ornamental. These are remarkably early instances of compound openings and piercings,

such as are not often met with until after the middle of the twelfth century.

The presence of the primitive groined vault, and the round arch in the internal openings, of this triforium, in singular contrast to the advanced character of the rest of the design, may, perhaps, be accounted for as a result of embarrassment arising from inexperience in the erection of a high vaulted structure. Having established the ground-story aisle with Gothic vaulting of necessarily considerable elevation, these unpractised builders may well have felt that to place a vaulted gallery of the same character over it would raise the clerestory dangerously high — the expedient of meeting the high vault thrusts by external flying buttresses being yet unknown. They may therefore have felt obliged to use the Roman form of groined vault, the lowest that can be constructed, necessitating the round arch in the triforium arcade. But this and all other explanations of the puzzling forms often met with in the monuments of past ages, concerning which we have no precise information, must be understood to be conjectural; though in some cases, as in this one, the evidence appears to have almost the force of certainty. Over a vaulted gallery there must, of course, be a second triforium. This, in St. Germer, was formerly pierced with upright rectangular openings — one in each bay. These have been walled up, but their framing mouldings still remain, so that the original design is entirely preserved from the pavement to the crown of the vault.

In the structural features of St. Germer thus far noticed we have found only improvement in the use of forms and principles that had been more or less imperfectly developed in smaller and earlier constructions. But we now come to a feature that is entirely new and of the greatest importance, namely, the rudimentary flying buttress. On the outside of the clerestory only a feeble buttress in the form of an engaged column appears; but the thickness of the pier is considerable, the wall of the clerestory is heavy, and the wall arches of the vault are unusually deep. These combined members offer in themselves strong resistance to the vault thrusts. The builders appear, however, to have lacked confidence in their power without further reënforcement securely to maintain the stability of the system. They accord-

ingly resorted to the novel expedient of springing half-arches from the tops of the outer piers against the internal piers beneath the timber roof of the triforium. Though weakly constructed, ineffectively adjusted, and hidden from view, these are true flying buttresses in rudimentary form — features which soon after develop into the most essential and the most conspicuous of those which make up the external system of the Gothic building. Figure 32, a section through one side of the choir, will illustrate the whole structural system. This concealed flying buttress suggests another possible reason for the Romanesque form of the triforium. In order to get the necessary space for the flying buttress beneath the aisle roof, the upper triforium had to be of considerable height, and if the vaulted triforium gallery had been constructed in the Gothic manner, it would either have diminished this height or raised the clere-story to a level which, as already remarked, the inexperienced builders may have thought would be unsafe.

Externally this building exhibits no Gothic character whatever. Its plain walls, small round-arched openings, and shallow buttresses are thoroughly Romanesque. Some French writers have therefore supposed that the Gothic features of the interior constitute a partial reconstruction of the edifice executed at a time considerably subsequent to that when the church was originally built.<sup>1</sup> But a close examination of the structure shows it to be homogeneous throughout, so that however dissimilar in form, the inside and the outside of the building can hardly be considered other than the work of one epoch and parts of one whole. This want of agreement between the interior and the exterior is a marked characteristic of most early Gothic monuments; and is an interesting evidence of the mode of the Gothic evolution which begins with the vaulting of the interior, where the necessity for structural innovations was first felt. In no other building is the fact that the Gothic style was primarily a structural development more clearly apparent than in St. Germer. The arches are pointed only where the mechanical exigencies of the vaulting have called for arches of this form.

<sup>1</sup> M. A. de Dion advances this theory (*Bulletin Monumental*, vol. lii. pp. 12-22) and supports it with arguments that would seem strong were it not for other considerations overlooked by this writer, some of which were urged by M. Lefèvre-Pontalis, in a rejoinder to M. de Dion (appended to the latter gentleman's article).

They occur in the arcades of the ground story and clerestory — where they have to perform the function of vault ribs as well as

FIG. 32. — Section of System of St. Germer-de-Fly.

of archivolts — and in the transverse and longitudinal ribs, but not elsewhere.

The Church of St. Maclou of Pontoise affords evidence of further progress in the vaulting of apsidal aisles. This edifice, though considered by so high an authority as M. Lefèvre-Pontalis to be posterior to Suger's apse of St. Denis,<sup>1</sup> exhibits features which seem to justify the belief that it is of an earlier epoch. The round arch is here retained in the wall ribs, the profiling of the diagonal ribs is primitive, the pointed section (like that of St. Étienne of Beauvais) occurs in some of the vaulting shafts, and the capitals and bases are of early type. These characteristics, though not necessarily affording conclusive evidence, would appear to indicate that the work is earlier than St. Denis. And further confirmation of this view is found in the peculiar arrangement of the ribs, whereby each compartment of the aisle, and the chapel which opens out of it, are united under one vault (Fig. 33). The arch *c* (Fig. 26, p. 72), which in St. Germer separates the chapel vault from that of the aisle, is here omitted. In place of the two ribs which in the chapel of St. Germer converge on the crown of the arch *c*, we have, in St. Maclou, a single rib of greater length reaching forward into the aisle to the intersection of the diagonals of its vaulting. A further innovation is noticeable here in the forms of the diagonals themselves, which, as shown in the figure, are straight in plan, instead of being curved as in Morienvall and St. Germer. Thus all survival of forms growing out of ancient modes of vaulting by interpenetrating geometrical surfaces have disappeared, and the skeleton of ribs wholly determines the shape of the vault. It yet remained, however, to find a way, while avoiding the curved diagonal, to more nearly equalize the areas of the several triangular cells which are here, owing to the straight direction given to the diagonals, very unequal in size.

This was accomplished in the Church of St. Denis as it was rebuilt under the administration of the Abbot Suger, and consecrated in the year 1140. The greater part of Suger's church has been destroyed, but among the portions that have survived are the apsidal aisles and the radial chapels. These have been preserved in excellent condition, and they exhibit a surprising architectural advance. The design is more elaborate than that of any building thus far considered, and it is on a larger scale.

<sup>1</sup> *Monographie de L'Église St. Maclou de Pontoise*, Paris, 1888, p. 99.



The aisles are double and foreshadow the vast and magnificent aisles of Paris, Chartres, and Amiens. The work shows few signs of hesitation or experiment, and bespeaks the sureness and executive precision of builders who had already attained a high degree of understanding and skill. Here (Fig. 34) we have a modification of, and an improvement on, the arrange-

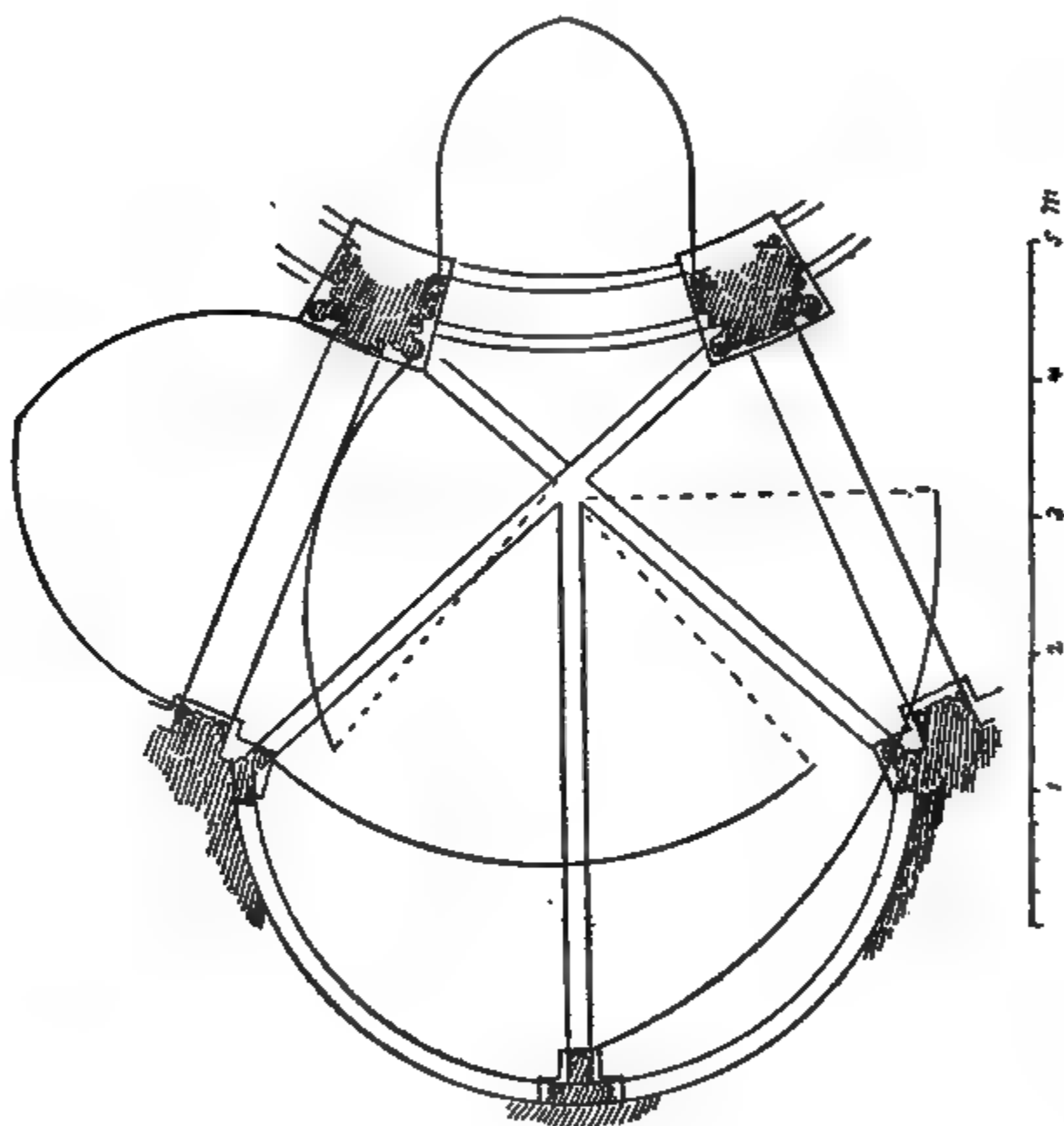


FIG. 33. — Vault of Apsidal Aisle, Pontoise.

ment of the vaulting just noticed in Pontoise. The chapel and the adjoining bay of the aisle are in the same manner united under one vault by the omission of the dividing arch, and the extension of the rib *c* to the intersection of the diagonals. But the ill-proportioned length given to this rib in the vault of Pontoise, and the unequal dimensions of the triangular cells which there result, are avoided here in St. Denis by an innovation that

established the distinctively Gothic arrangement of diagonal ribs in apsidal aisle vaulting — that, namely, of disposing their opposite branches (which as in Pontoise are straight in plan) so that they meet at an angle. The point of intersection may be thus placed wherever the architect chooses. It is here near the centre of the vault, and the cells are by this means rendered nearly

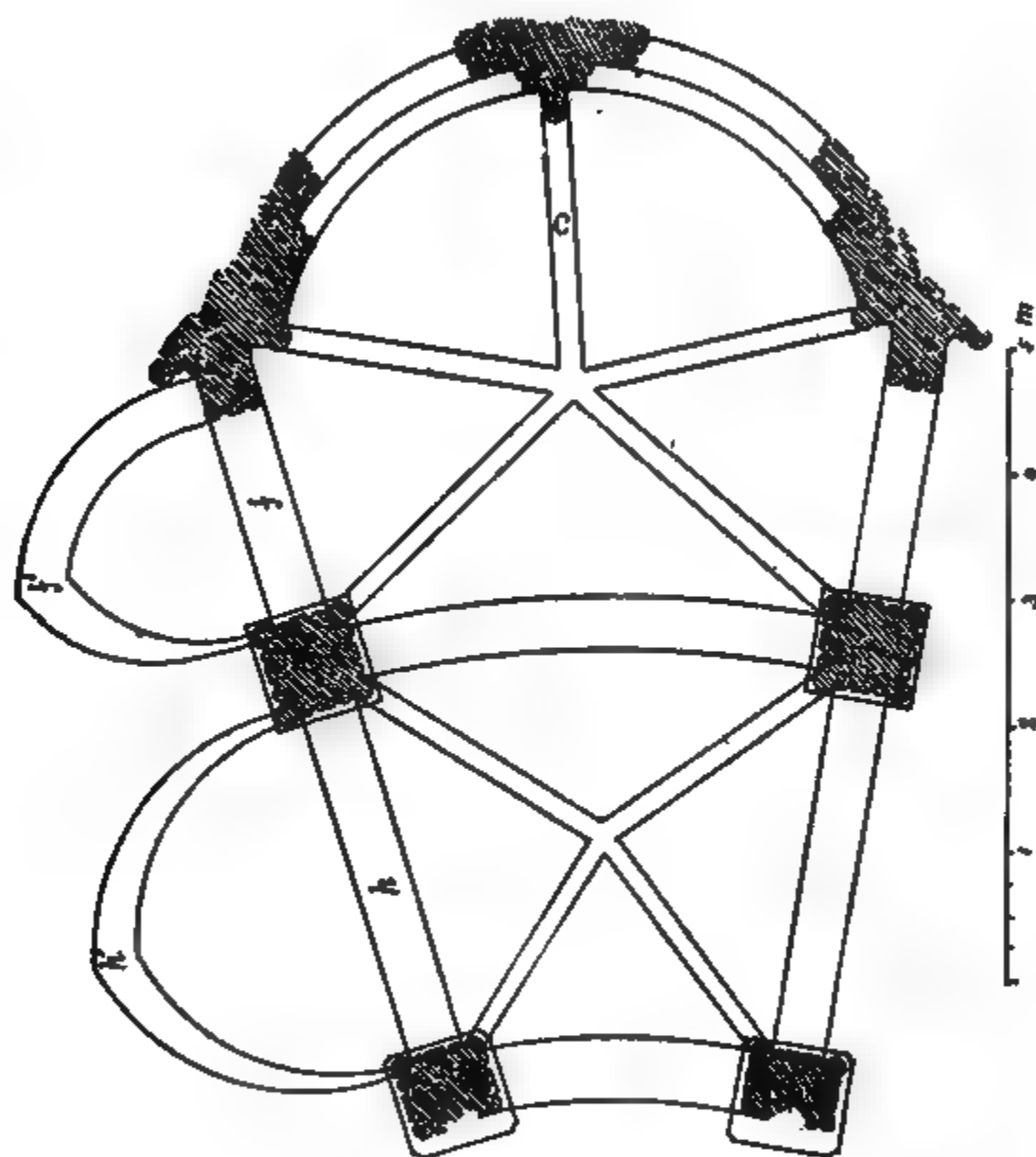


FIG. 34. — Vaults of Apsidal Aisles of St. Denis.

equal in area. This vaulting has a full system of ribs, all of which, except the diagonals, are pointed. Here also, apparently for the first time, the window openings of the chapels have pointed arches concentric with the structural arches of the vaulting. It is noticeable, too, that these openings are much enlarged, their archivolts forming sub-arches to the vault ribs.

Although the difficulties that had embarrassed the earlier builders, and had led to the awkward forms of the apsidal

vaulting of Morienvall, were now largely conquered, yet irregularities of form could not be wholly avoided. Irregularities are, in fact, inherent in the Gothic system, which in this respect resembles nature itself, where a vital principle seems to operate to prevent perfect uniformity in the development of organic forms. And in Gothic architecture, as in nature, these irregularities often give to the forms produced an added charm. They result, in part, from lack of mechanical precision in laying out plans and carrying up the edifice, but more largely from structural necessities. It will be seen, for instance, that the trapezoidal plan of this bay of the apsidal aisle of St. Denis is considerably askew, and that the vault rib  $f$ , whose elevation is  $f'$ , having to interpenetrate with the other ribs which spring from the impost  $g$ , in order that they may all be gathered upon the capital of the single column of the system which divides the aisles, gives to the arch of the vault surface the same one-sided form that we have noticed in the vault of Morienvall. This, of course, results of necessity in all cases where a vaulting arch interpenetrates at the impost on one side and not on the other — which it often does even in advanced Gothic buildings, as in the apsidal aisles of Chartres. If it were desired to avoid this interpenetration, a group of columns would be needed instead of a single one, so that each rib of the compound impost might rest on a capital of its own. But such a group of columns would take up too much space, and produce a heavy effect in the aisle. In cases where both sides of the arch interpenetrate, the arch of the vault surface becomes, of course, symmetrical, but it is not concentric with the intrados of the rib — as may be seen in the elevation  $h'$  of the arch  $h$  (Fig. 34).

From this analysis it will be seen that in St. Denis the apsidal aisle vault was almost completely developed. The difficulties of vaulting such aisles by the older methods of construction had been considerable, and the work when accomplished was inelegant. The sinuous unsupported groins of the primitive apsidal compartments were inherently weak, and the excessive stilting and other awkward expedients necessarily resorted to were unsightly. But by the use of the rib system and the pointed arch the architects were now enabled to vault these concentric aisles with facility, security, and elegance.

The apsidal aisles of the Church of St. Louis of Poissy and

the Cathedral of Sens, though backward in development as compared with St. Germer and St. Denis, exhibit respectively some experimental adjustments that require notice. I have already, in the preceding chapter (p. 54), spoken of St. Louis of Poissy as a Romanesque rather than a transitional monument. The eminent French writer, M. Felix de Verneilh,<sup>1</sup> has, however, supposed it to be the immediate precursor of St. Denis, and more recently the same view has been taken by M. Anthyme Saint-Paul.<sup>2</sup> But in the light of the constructions already considered a theory which derives the apsidal vaulting of St. Denis directly from that of Poissy is hardly tenable; and the emphatic statement of Viollet-le-Duc<sup>3</sup> that the principles of the vaulting of St. Denis are not approached by those of Poissy is not too strong. For in the vaulting of Poissy the principle of interpenetrating regular geometric surfaces is largely retained. The crowns of the vaults are straight in section, and the groins are without ribs.<sup>4</sup> The aisle vaulting of Poissy is thought to be nearly contemporaneous with the vaulting of St. Germer and also with that of Pontoise; its primitive character is therefore remarkable, especially when its locality so near to Paris is considered. The longitudinal rib, however, is here present, and the manner of its adjustment to the other arches of the vault is unlike anything that we have before met with, and is worthy of notice. The vaulting arches of Poissy are all semicircular or segmental, and this longitudinal rib, spanning the longest side of the vault, has necessarily a higher crown than those of the other sides. To prevent, therefore, the crown of this rib from reaching much higher than that of the opposite arch on the narrow side of the trapezoid, its springing is placed at a lower level than that of the other arches.<sup>5</sup> Many of the minor features of Poissy, as the capitals and bases of the apsidal piers, closely

<sup>1</sup> *Les Premiers des Monuments Gothiques*. Paris, 1864.

<sup>2</sup> *Viollet-le-Duc et son Système Archéologique*, Tours, 1881, p. 130.

<sup>3</sup> *Dictionnaire*, s.v. *Voute*, p. 503.

<sup>4</sup> St. Louis of Poissy has suffered so greatly from restoration and alteration that it is now hardly possible to gather from the building itself any clear understanding of the original east end. If, however, the drawings by Viollet-le-Duc, made before the restorations, and now in the Trocadero, may be trusted, the statements in the text above are correct.

<sup>5</sup> In St. Denis the groin rib is sprung from a level below that of the transverse rib for the same reason.

resemble those of St. Denis; but in the structural principles of its vaulting the two monuments have little in common.

The apsidal aisles of the Cathedral of Sens, which are nearly contemporaneous with those of St. Denis,<sup>1</sup> while having considerable likeness to Poissy, exhibit a much more advanced construction. The vaults have here the domical form, are provided with groin ribs, and have the pointed arch on the narrow side of each compartment. In the groin ribs the same adjustment occurs that we have noticed in St. Denis — the opposite branches of each rib meeting in plan at an angle, and bringing the inter-

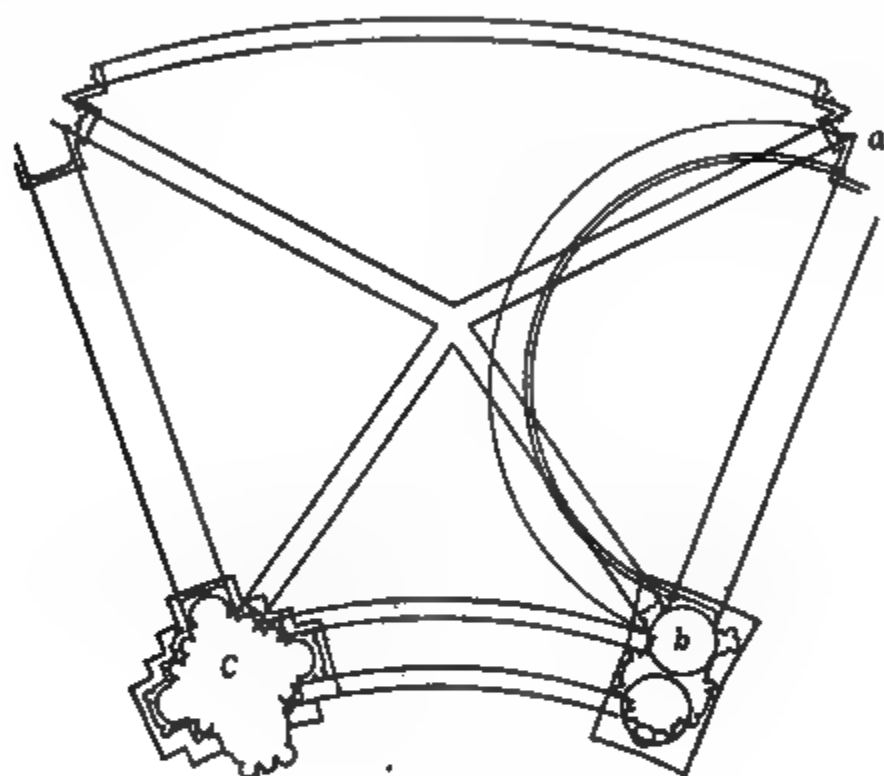


FIG. 35. — Vault of Apsidal Aisle of Sens.

section near the middle of the compartment (Fig. 35). If Sens be, as some writers suppose,<sup>2</sup> anterior to St. Denis, then this innovation may be due to its architect. In the adjustment of the arch on the long side of the vault, the architect has followed the designer of Poissy. The shaft group, also, is composed like that of Poissy, and thus has no member for the support of the diagonal rib. The diagonal rib here inserted rests, therefore, on a corbel placed just above the impost of the transverse rib (Fig. 36) as in the choir of St. Germer (Fig. 30). Another characteristic of this vaulting is the manner in which the inner branches of the transverse ribs are provided for by separate

<sup>1</sup> Cf. Anthyme Saint-Paul, *Op. cit.*, p. 138.

<sup>2</sup> *Ibid.*, p. 139.

supports in the great piers. The easternmost two of these piers consist of coupled round columns ranged in line with the direction of the transverse rib — as at *b*, Fig. 35; while the other two are composed as at *c* in the same figure. Ample space is thus afforded for the impost of each arch, and no interpenetrations, or distortions of the vault surfaces, occur.

It is impossible to be precise in chronological sequence, but the cathedrals of Noyon and Senlis must, it would seem, have followed very soon after Suger's work at St. Denis. They are, beyond doubt, nearly contemporaneous buildings,<sup>1</sup> and illustrate the progress that had been made by the middle of the twelfth century. Both of these churches were designed on a considerable scale. They have apsidal aisles, radial chapels, and vaulted triforium galleries. In their proportions and structural features they show a free exercise of the inventive talents of those secular builders who were already beginning to take a leading part in architectural works, finding scope for their genius in the communal cathedrals that were now rising in quick succession in the newly chartered towns.

Noyon had been one of the first cities to organize a commune, and it had done so under the fortunate circumstance of its bishop having taken an initiative in the work, so that from the first there was harmony between the ecclesiastical and civil authorities,<sup>2</sup> which was not always the case else-

FIG. 36. — Sens.

<sup>1</sup> M. Vitet has shown (*Notre-Dame de Noyon*, par L. Vitet, Paris, 1845) that the earliest portions of Noyon must have been begun as early as 1150, while Senlis is supposed by M. Lefèvre-Pontalis (*Bibliothèque de l'École des Chartes*, vol. xlvii. p. 492) to have been begun about 1156.

<sup>2</sup> A. Thierry, *Lettres sur l'Hist. de France*, p. 223 et seq.

where. From this circumstance it has been supposed by M. Viollet-le-Duc<sup>1</sup> and by M. Vitet<sup>2</sup> that the communal influence in the design of this cathedral was less exclusive than it was now generally coming to be, and that some of its features (the peculiar use of the round arch in connection with the pointed arch, and the ample development of the apsidal chapels) may be concessions to the ecclesiastical traditions and preferences. In the light, however, of the earlier and contemporaneous monuments, which had not been thoroughly studied at the time when these authors wrote, there seems to be little ground for this view. The ecclesiastical builders had themselves made the first structural innovations, and it does not appear that they had any conservative preferences standing in the way of architectural progress, though this progress was undoubtedly hastened when the lay builders began to take a leading part in the production of monumental works.

However this may be, the choir and apse of Noyon are indeed in some respects peculiar in design. In transitional buildings generally, the pointed arch is used throughout for the structural arches of the interior. At Noyon this is not the case. We have noticed in the triforium gallery of St. Germer another exception to the general use of the pointed arch in interiors, but at Noyon we find the round form retained in some of the most important structural arches.

The system of this choir is uniform, and the original high vaulting has survived, though it has been somewhat repaired. As in St. Germer, the crowns of all of the vault ribs are made to reach to nearly the same level, though in the longitudinal rib (the one which, as being the narrowest in span, most requires the pointed form) the round arch is retained. To get the crown of this rib up to the high level which it reaches, it had, of course, to be very much stilted. This seems to afford another proof that the pointed arch was not introduced into the Gothic system because of an æsthetic preference; for the builders here seem to have been not quite settled in their minds with regard to its use, choosing, in this case, rather than to employ it to stilt thus excessively the round arch.

<sup>1</sup> *S.v. Cathedral, Dictionnaire*, p. 303.

<sup>2</sup> *Monographie de l'Église de Notre-Dame de Noyon*.

In the apse the pointed form alone is used, not only in the structural arches of the interior, but also in the external openings of the ground story, the triforium, and the clerestory. This apse is thus apparently the earliest extant structure of three stories in which the pointed arch is used consistently throughout. In the choir the vaulting of the triforium gallery is also on pointed arches, and hence the triforium openings are pointed; but in the lower aisle vaulting the round arch is retained in all except the transverse ribs, so that the ground-story archivólts of the choir are necessarily round. They are of a single order of square section, with plainly bevelled edges, and have a singularly primitive effect in a design that is in many respects far advanced in Gothic character. We have thus in the choir of Noyon an arrangement which is just the reverse of that above noticed in St. Germer, where a round-arched triforium is placed between a ground story and clerestory, both of which have pointed vaulting. It seems not unlikely that this may have arisen as another mode of meeting the difficulty that appears to have embarrassed the builders of St. Germer. Choosing to have the higher Gothic triforium, the architect of Noyon may have been led to employ the low round-arched ground story, fearing that otherwise he might carry the whole structure dangerously high. It is further noticeable that the upper triforium of Noyon is so much lower than that of St. Germer that there can hardly have been room for concealed flying buttresses, and it is not improbable that these important members of the Gothic system were here for the first time used externally.<sup>1</sup>

The principal innovation that occurs in the choir and apse of Noyon (unless it be true that the external flying buttress was here first developed) is the substitution of single round columns for compound piers on the ground story. Such columns had before been used in alternation with compound piers, as in the nave of Jumièges, and in the curve of the apse as at Vignory, Notre-Dame de la Couture of Le Mans, Poissy, and elsewhere; but they had not, I believe, before been employed

<sup>1</sup> I have not very thoroughly examined this part of the apse of Noyon on the spot. It is quite possible that the form of the primitive buttressing could still be made out by an examination of the piers beneath the aisle roof. The existing external buttresses of the clerestory are interpolations of the Renaissance period.



for the entire ground-story system of a vaulted edifice. They are here very slender in proportion to the bulk and weight of the loads they carry, and are in this respect without precedent in Western Europe, though columns of equal slenderness (already noticed, p. 33) were used long before in the Church of St. Sophia of Constantinople.<sup>1</sup> In such piers the vaulting shafts rise from the spreading capitals (Fig. 148, p. 310) of these columns, and there are consequently no vaulting shafts rising continuously from the pavement upward. But much space is gained by the use of such columns, together with a general effect of lightness and elegance. This system was afterwards adopted for both choir and nave in the larger cathedrals of Paris and Laon, but it was soon after improved upon,—the builders, as we shall see, finding a mode to secure the starting of the vault supports from the pavement without returning to the massive compound piers of the earlier vaulted structures.

We now come to an important monument in which a somewhat different type of construction occurs—the Cathedral of Senlis. Senlis, like St. Germer, was originally constructed throughout on one uniform design, but, unlike St. Germer and most other large churches, it had originally no transept.<sup>2</sup>

Of the choir the primitive construction survives, with a few minor exceptions, up to the level of the clerestory string; but the existing clerestory is an incongruous and ill-proportioned work

<sup>1</sup> The original ground-story columns of the choir of Noyon remain in the curve of the apse only. Those of the straight part of the choir, which are of larger dimensions, with a small engaged shaft on each, are alterations of a later epoch. In the westernmost pier on the south side, the abacus of the original smaller column may be still seen above that of the later one.

<sup>2</sup> The evidence that Senlis had originally no transept is plain in the monument itself. The space (12.50 m.) between the main pier of the nave at the crossing of the existing transept, and the main pier on the east side of the first bay of the choir, is almost exactly equal to that of two double bays. Moreover, this main pier of the nave has a capital on the transept side of the same size and type, and on the same level, as the one on the opposite side which carries the ground-story archivolt. This capital, which now has no function, must have carried its part of the continuous arcade of the primitive nave. The alteration was made, apparently, about the middle of the thirteenth century by destroying one double bay and altering another into a rather wide single bay. The date of this change is manifest by the character of the newly inserted crossing pier on the east side of the transept. This has the slender shafts and capitals of the type that characterizes the work of the middle of the thirteenth century. But this transept is disfigured in many parts by later flamboyant alterations.

of a much later period. The pier system is alternate, and the forms of the piers show that the primitive vaulting must have been constructed on the sexpartite plan which had been evolved in the Abbaye-aux-Hommes at Caen. But the architectural progress of the time must have been shown in the improved form and execution of the vaults, which were probably the earliest sexpartite vaults ever constructed on Gothic principles. Hardly any vaults of this form are extant in the Ile-de-France of a date earlier than those of the choir of the Cathedral of Paris — which were completed about 1177.<sup>1</sup> The sexpartite vaulting

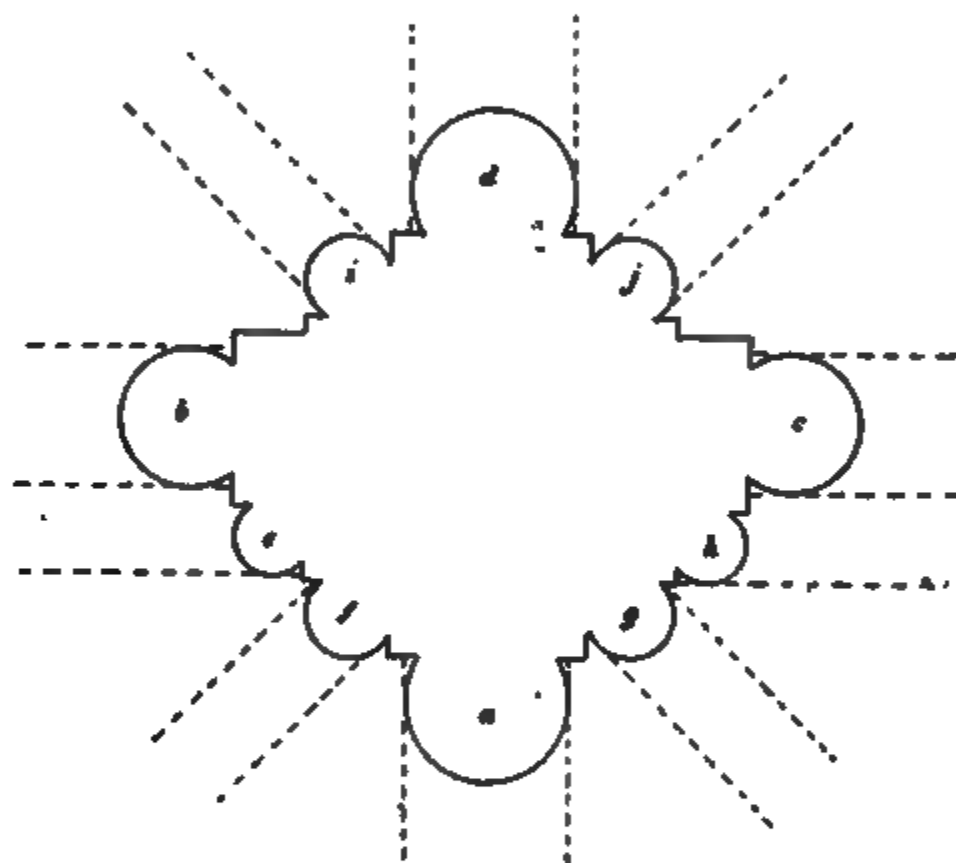


FIG. 37. — Senlis.

of Caen seems to have been, as we have seen (p. 48), developed largely by chance in altering the building at a period considerably later than that of its original construction. The vault supports there, having been derived from the Lombard models, were not intended for such vaults as they now carry. But here in Senlis nothing was fortuitous or unforeseen. The vaults and their supports were simultaneously conceived, and were in all respects parts of an organic whole. This is shown by the piers still extant, though not a stone of the primitive vaulting remains in place. The section of the main pier is shown in Fig. 37. The

<sup>1</sup> Cf. V. Mortet, *Étude Historique et Archéologique sur la Cathédrale et le Palais Episcopal de Paris*, Paris, 1888, p. 43.

round column *a* supported the main transverse rib of the high vault, *b* and *c* were the supports of the archivolts of the ground story, and *d* supported the transverse rib of the aisle vault, while *f* and *g* carried the diagonal ribs of the high vault, *i* and *j* the diagonal ribs of the aisle vault, and *e* and *h* the longitudinal ribs of the high vault. The only capitals in this pier on the ground-story level are those of the archivolt columns and the vaulting shafts of the aisles. The five other members which compose the great vaulting group rise without interruption to the point from which the high vault sprung. The whole pier is built up of coursed masonry admirably cut and closely jointed. The intermediate pier is, on the ground story, a single round column from whose capital (upon which are also gathered the two archivolts, and the transverse and diagonal ribs of the aisle vault) rise three slender vaulting shafts to support the intermediate transverse rib and the two longitudinal ribs.

The vaulting of Caen (Fig. 15, p. 49), though constituting a new and fecund type, is not Gothic vaulting. In Gothic vaulting every arch has a supporting rib, and the rib system constitutes an independent framework which determines the form of the vault. But in Caen the rib system is incomplete, it but partially and imperfectly performs the function of an independent skeleton, and it but slightly determines the form of the vault. The mind of the builder had not freed itself from the idea of the Roman groined vault. He felt the advantage of the rib system in an imperfect way, however, and this, together with the sex-partite innovation which the intermediate shaft had suggested, compelled a wide departure from the Roman form. The result is curious. The larger triangles of the vaults have nearly cylindrical surfaces, but the groin arches being, as we have seen (p. 48), imperfect segments of circles rather than semi-ellipses, some distortion of the cylindrical form is occasioned. The most radical departure from the ancient principles of vaulting occurs in the lateral cells. These do, indeed, mark a far-reaching, though an awkward, step in the direction of Gothic vaulting. The surfaces of the triangular spaces enclosed by the intermediate transverse ribs, the diagonal ribs, and the clerestory wall necessarily assume irregular forms in accommodating themselves to the positions, and the varying curves, of these arches, and owing to the shapes and the adjustments of the

arches the forms are needlessly inelegant. In Senlis, on the other hand, the logical design and skilful execution of the piers just described, together with the admirable execution and design of aisle vaulting, make it appear certain that here there were no

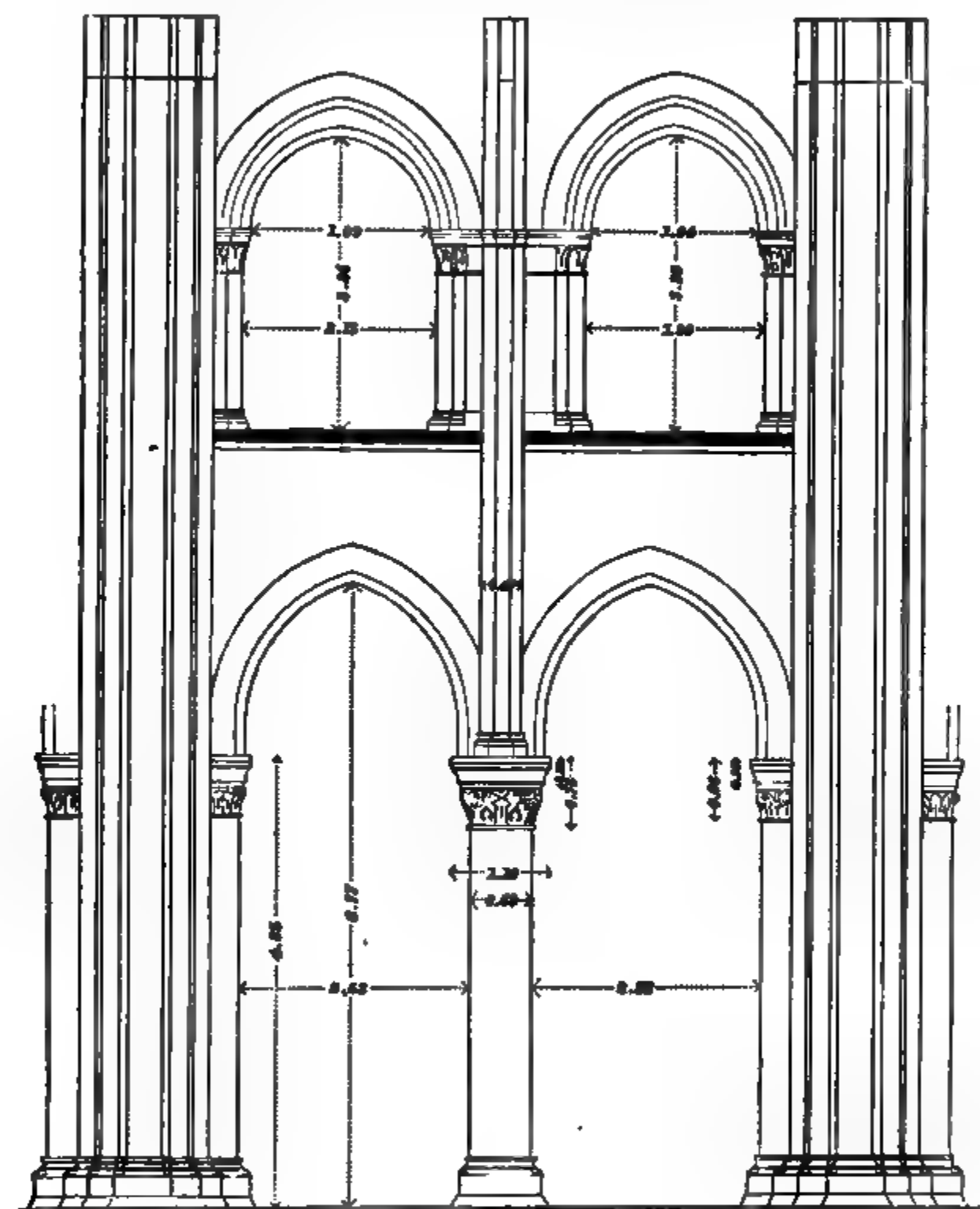


FIG. 38. — Senlis.

such defects. The architect of this monument had a perfect understanding of his vaulting scheme in all its parts, and of the means by which it should be carried out. His ground plan was laid out, and the forms of his piers were determined with rigor-

ous provision for its requirements. The principle fortuitously evolved and rudely embodied in the Abbaye-aux-Hommes was undoubtedly worked out in Senlis with mechanical precision and artistic skill.

Figures 38 and 39, an elevation and section, and Fig. 40, a perspective view, will afford a clearer idea than words can do of what remains of this choir.<sup>1</sup> It will be seen that the archivolts are pointed in both ground story and triforium. Those of the triforium are of two orders which are not concentric, an adjustment of doubled orders which is rare in France, though it occurs in a few other transitional buildings, as in the neighbouring Church of St. Evremond of Creil and also in St. Denis. The perspective view will afford some idea of the quiet beauty of this interesting monument, as well as of the degree of Gothic expression that was reached in it. In the apse of Noyon we apparently have the earliest extant monument of three stories in which the pointed arch is used throughout. In Senlis we have, perhaps, the earliest instance in which this arch was used throughout the interior alike for apse and choir.

The same constructive logic is carried out in the other portions of this interior. The vaults of the aisles, of the apsidal chapels, and of the triforium gallery show no defects of principle or of workmanship; and they remain in perfect condition. It will be noticed (plan, Fig. 41) that the great rib *c* dividing the vault of the apsidal chapel from the adjoining compartment of the aisle, which was omitted in Pontoise and St. Denis, is here restored; and that the vault of the chapel, thus rendered independent of that of the aisle, has groin ribs like those of a rectangular vault, and that the groins of the aisle compartment are arranged, like those of St. Denis, so as to follow straight lines in the plan and intersect in the middle of the vault. At Noyon, where the chapels are more developed, a similar arrangement of the ribs occurs, together with an additional rib in the direction of the axis, which makes the vault (Fig. 42) *quinquepartite*. This, with further amplifications, became the general form of apsidal chapel vaulting—the number of cells being increased to six in the cathedrals of Chartres, Amiens, Reims, and other large churches. The window openings of the chapels of Senlis

<sup>1</sup> The wall is left incomplete in the section (Fig. 39), because later alterations have obliterated all traces of the original design in the parts omitted.

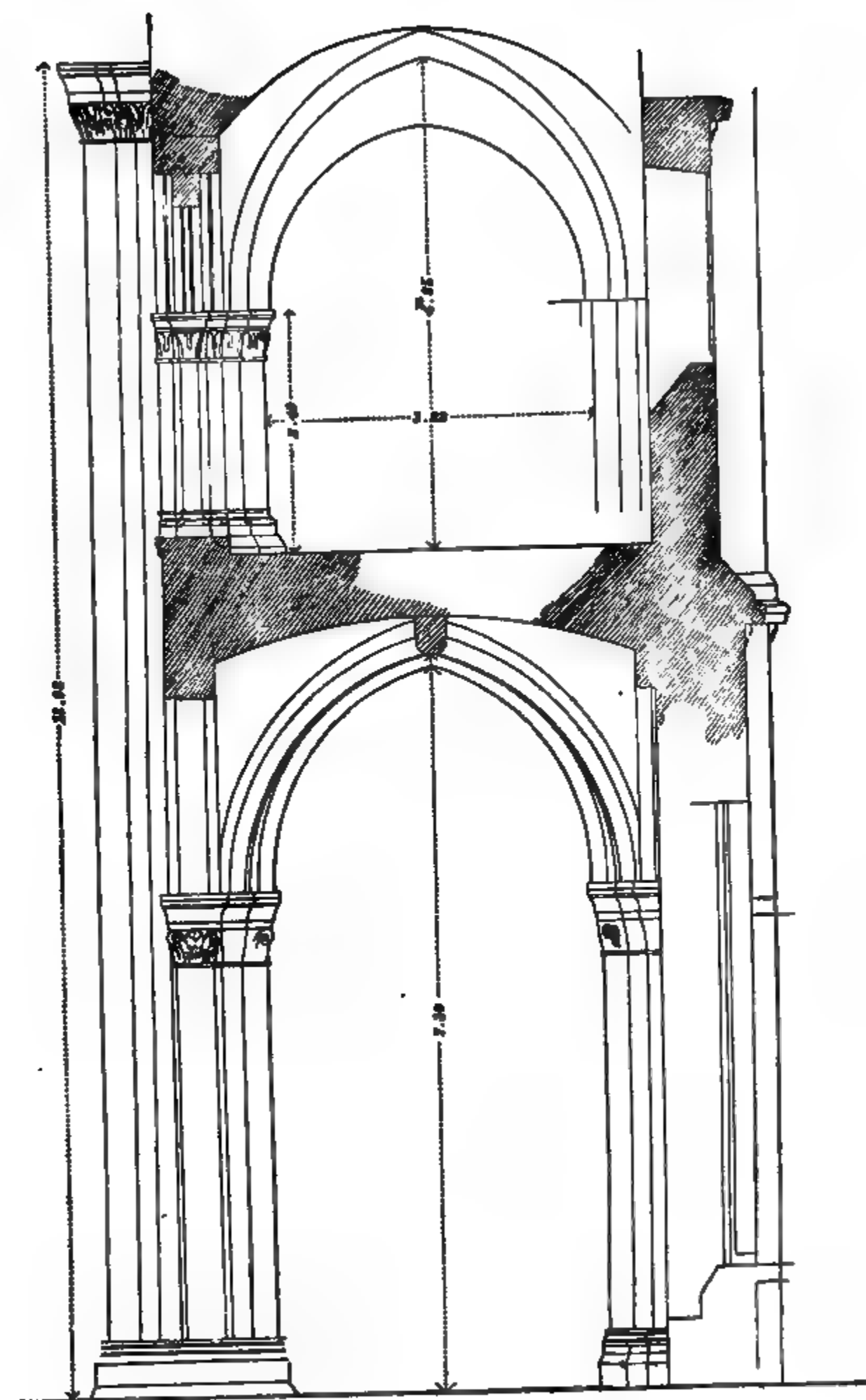


FIG. 39. — Senlis.

are large, and a few of them are slightly pointed, but the most are round-arched.

It may here be remarked that we have reached the time of

FIG. 40. — Senlis.

greatest perfection in masonry, and nowhere do we find skill in the manipulation of carefully selected material more admirably exhibited than in the Cathedral of Senlis. After 1130, for a

period of perhaps sixty years, the vaults, piers, and walls of the Gothic buildings are unrivalled for fineness of facing and precision of jointing. They are in this respect in striking contrast

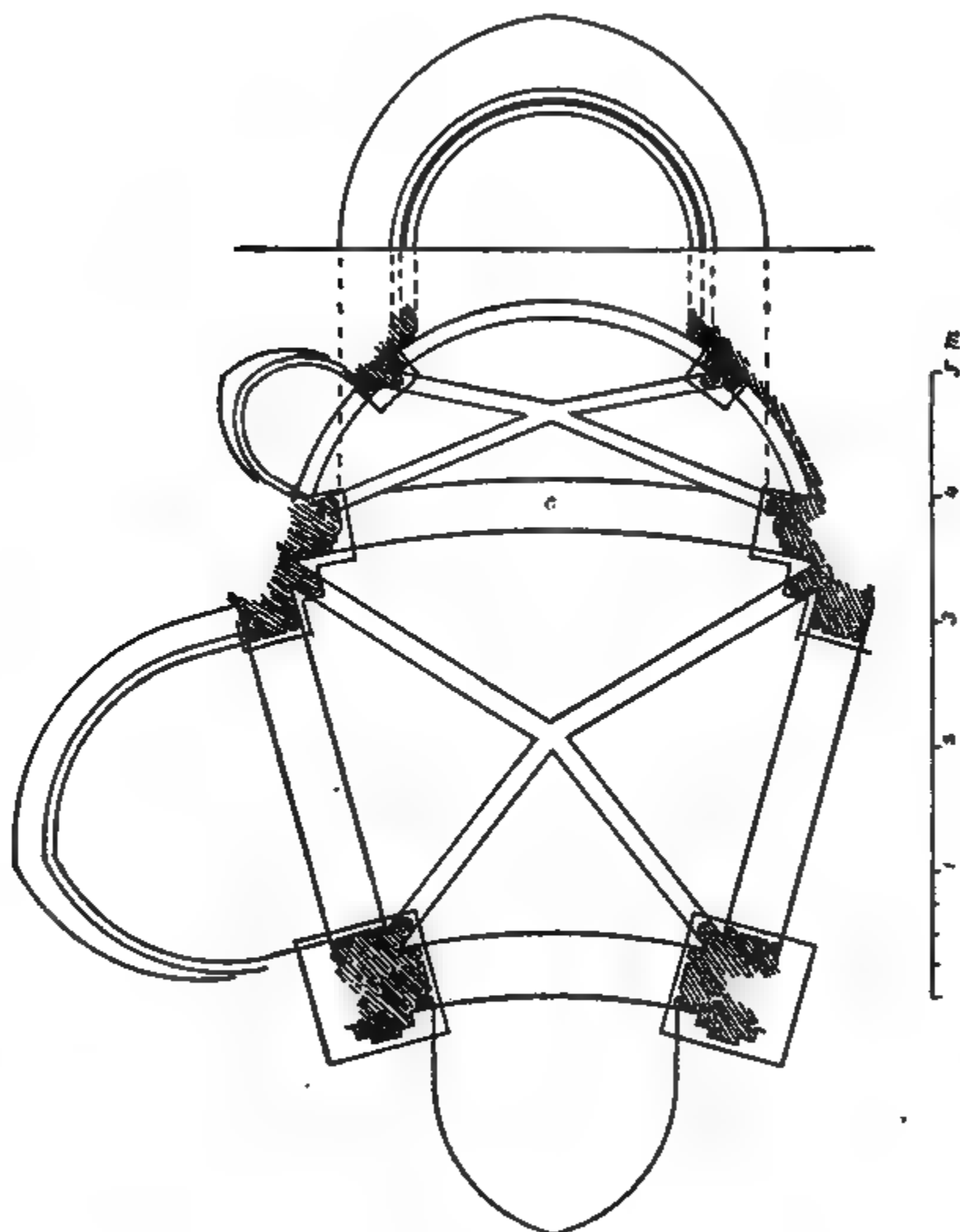


FIG. 41. — Senlis.

to those of the larger constructions of the thirteenth century, which are often rough-jointed and rudely faced.

We have already noticed that the churches of St. Germer and Noyon exhibit a nearer approach to Gothic character and expression within than without, and the same is true of Senlis.



The interior is frankly Gothic in its structural features, while what remains of the original exterior is almost as completely Romanesque as that of St. Germer. External features, in the Gothic system, are a consequence of internal structure, and in the process of development they are the last things to change. The change begins at the very heart of the fabric

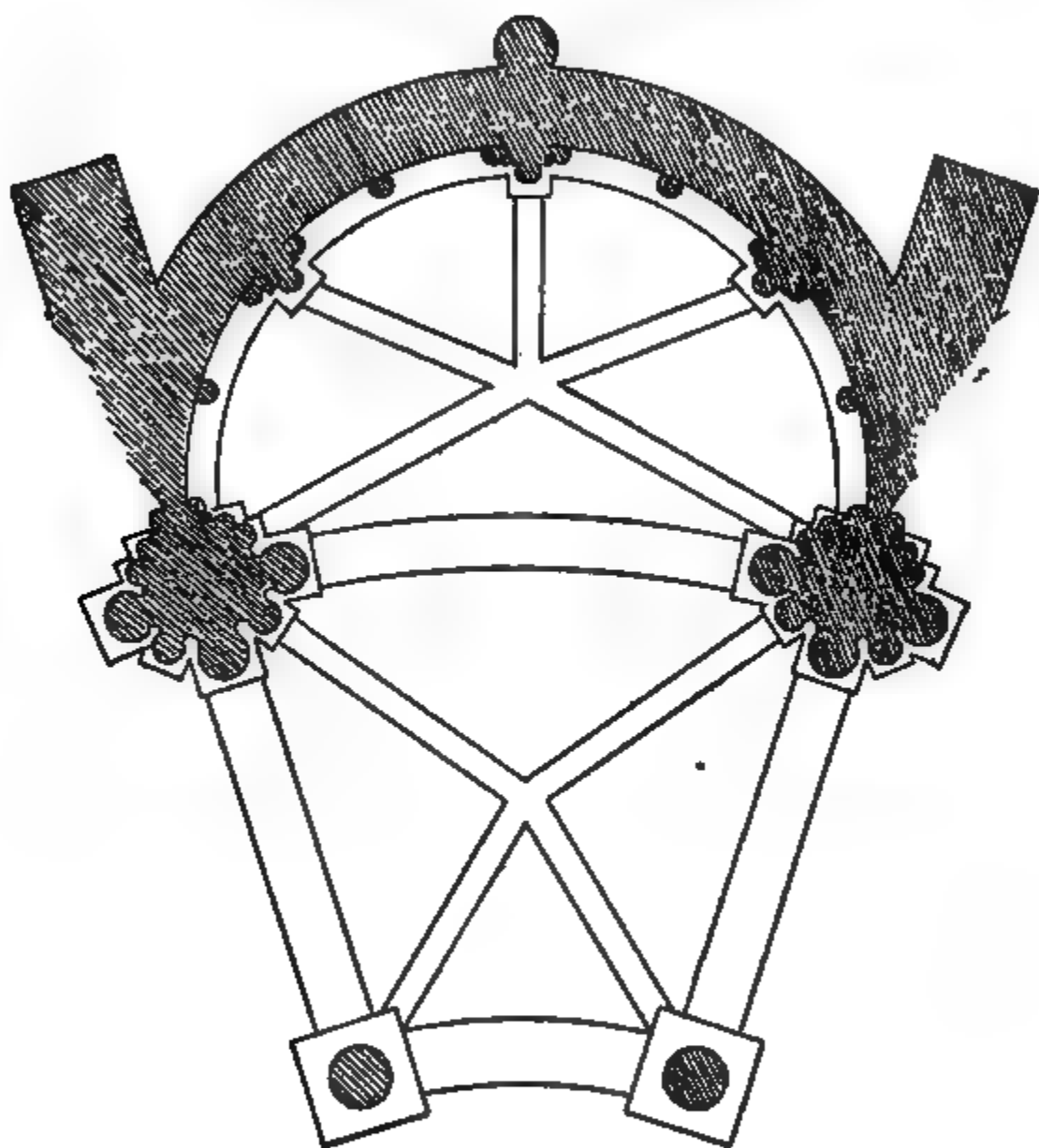


FIG. 42. — Noyon.

and gradually works outward till every part is reached. The new principle is first seen operating imperfectly in the diminutive vaults of Morienvall; it works with more sureness in the vaulting of Bury, Berzy-le-Sec, and other small buildings; then in the high vaults of St. Germer, Noyon, and Senlis, it makes further advances and creates for itself an appropriate system of supports; and thus it moves on, as we shall see, in this creative fashion until the full development is accomplished.

What was the precise mode of buttressing the high vaults of Senlis we have now no means of knowing. The existing flying buttresses belong to the flamboyant reconstruction of the clerestory. It is possible that flying buttresses may have sprung over the aisle roofs, but it seems more probable that if any such abutments were employed they were concealed beneath these roofs; for the springing of the vaults was at a comparatively low level, as is shown (Figs. 39 and 40) by the capitals which remain in place.<sup>1</sup> Moreover, the piers are as yet almost heavy enough to have resisted the vault pressures without other reënforcement than that which is afforded by the triforium vaulting.

The choir of the Abbey Church of St.-Germain-des-Prés of Paris (Fig. 43), which was consecrated in 1163, and is therefore nearly contemporaneous with Noyon and Senlis, is another monument of the highest interest in connection with the early Gothic development. This choir remains intact, with exception of a deplorable alteration in the clerestory and triforium, both within and without. The system is uniform, the vaults are excessively domical, and the piers are like those of the choir of Noyon in having single round columns on the ground story with the vaulting shafts rising from their capitals. There are three vaulting shafts on each pier, which carry the transverse and diagonal ribs, while the longitudinal ribs rest on corbels (*a*, Fig. 43) placed above the impost of the clerestory opening. The early builders made many trials before they reached a satisfactory arrangement of supports for the ribs of the vaulting. The earliest vaults, often having no longitudinal ribs, required but three vaulting shafts — as in the nave of Bury (Fig. 23, p. 67). The designer of the piers of the choir of St. Germer followed the same model, but instead of springing the diagonal ribs from the lateral shafts he sprung them, as we have seen (Fig. 30, p. 76), from a corbel, because he wished to use these shafts for the support of the longitudinal ribs which were here inserted. After this in general, during the second half of the twelfth century, the shaft group is either made to consist of five members, one for each rib of the vault, as in the main piers of Senlis; or else the longitudinal rib is carried by a short shaft resting on the clerestory string, as, indeed, it is in St. Germer,

<sup>1</sup> The original capitals remain in place in the easternmost piers only.

though this short shaft is imperfectly supported by the lateral shaft of the main vaulting group. The springing of the longitudinal rib from a corbel without any shaft at all, as here in St.-Germain-des-Prés, is rare.

FIG. 43. — St. Germain-des-Prés.

A curious and unusually puzzling mixture of round and pointed arches occurs in the structural parts of this choir. The longitudinal ribs of the high vault, the ground-story archivolts, and the transverse ribs of the aisle vaulting are round, while the

transverse ribs of the high vaults, the transverse ribs of the aisle chapels, and the window openings of the clerestory are pointed. Thus to retain the round form in a structural arch where the pointed form would have done better, while the pointed form is employed without any structural reason, seems a curious contradiction of the logical spirit that is generally so marked in the works of the early Gothic builders. But notwithstanding this the choir of St.-Germain-des-Prés is far advanced in Gothic form not only in its internal system, but also in its exterior; for here we have not only the pointed arch in the clerestory openings, but (as shown in Fig. 43), the true flying buttress springing over the aisle roof.

The parts of the buildings thus far noticed have been, for the most part, choirs and east ends. The naves were generally constructed later; though in most cases they were built soon after the choirs were completed. While many minor puzzles are presented by the respective features of these early buildings which, in the absence of written records, often prevent an exact determination of their chronological relationships, yet there can be little doubt that such constructions as St. Evremond of Creil, the nave of St.-Germer-de-Fly, the vaulting of the nave of St. Étienne of Beauvais, and the naves of Noyon and Senlis followed closely after the works already mentioned. St. Evremond, St. Germer, and St. Étienne have regular systems with oblong quadripartite vaults, while the naves of Noyon and Senlis have alternate systems, and had originally sexpartite vaulting. In St. Evremond the ponderous character of Romanesque work survives, though the interior has all the essential members and dispositions of a Gothic design. The crowns of the vaulting arches are all at nearly the same level, and each rib has its own supporting shaft in the pier<sup>1</sup> as in the main piers of Senlis. Like most other transitional monuments, St. Evremond has no Gothic character externally, but under the aisle roof are concealed flying buttresses like those of the choir of St. Germer.<sup>2</sup>

<sup>1</sup> Except in the easternmost bay (which appears somewhat earlier than the rest of the work), where the diagonal rib interpenetrates the transverse rib so that both together rest on the central shaft, while the lateral shafts, of which there are but two, carry the longitudinal ribs.

<sup>2</sup> St. Evremond is a precious monument of transitional Gothic, though it has suffered greatly from neglect and violence. It has not, however, been injured by

The earliest extant Gothic nave on a large scale is, perhaps, that of St. Germer. Its character seems to indicate that it followed immediately after the completion of the choir and transept. Its date cannot, therefore, be far from the middle of the twelfth century.<sup>1</sup> Its oblong vaults are substantially like the vault of the choir already described (p. 74), but the piers are more developed, having, as in St. Evremond, a shaft from the pavement for each rib. Such a pier is merely an amplification of the type (Fig. 45, p. 105) employed in St. Étienne of Beauvais, having an added member on each side to carry the longitudinal rib—which in the primitive vaulting of St. Étienne was doubtless absent, as it is in the still extant vaulting of the aisles of the same building. The piers of St. Germer are majestic in appearance as well as logical in composition, but they are very massive, and a more compact form had to be devised before the Gothic system could reach its fullest distinctive character.

It has been suggested<sup>2</sup> that St. Étienne of Beauvais was probably the prototype of St. Germer, and a comparison of the two naves seems to confirm this view. But, as we shall presently see, some of the features of St. Germer probably did not exist in the original design of St. Étienne. They seem to have been inserted at a period considerably later than that of the primitive construction. So that if, in the first instance, St. Germer was derived from St. Étienne, St. Étienne may have been afterwards remodelled in imitation of St. Germer. The internal system of the nave of St. Germer is, for the most part, perfectly Gothic in principle; but, as in the choir, no Gothic character whatever appears in the exterior. Even the concealed flying buttresses are wanting here. The builders appear to have felt that the structure was massive enough to be secure

alteration, or so-called restoration. It is, in fact, a ruin, and has been for some time used as a manufactory of porcelain ware. The gases from the chemicals used in the processes of this manufacture have disintegrated the masonry of the interior, so that many of the details on the ground story are effaced. Many other buildings in this region, of great importance in the history of the early Gothic development, have suffered in like manner from neglect and abuse. The charming little Church of Noel St. Martin has long been abandoned and is falling into a state of ruin, and the beautiful Church of St. Frambourg of Senlis has been as much injured as St. Evremond, and has long been used as a storage house.

<sup>1</sup> Cf. Eng. Lefèvre-Pontalis, "Étude sur la Date de l'Église de Saint-Germer," *Bibliothèque de l'École des Chartes*, vol. xlv.

<sup>2</sup> Cf. M. Lefèvre-Pontalis, *Ibid.*, p. 493.

without them, and although only the two easternmost compartments of the vaulting have survived, it does not appear that the destruction of the others, which occurred in the year 1400,<sup>1</sup> was occasioned by any material yielding of the piers.

St. Germer seems originally to have possessed one feature that is rare in France, namely, a western transept. Its former existence is plainly indicated by the great crossing piers, two of which still stand and are exposed to view in the curious piece of patchwork that makes up the existing west façade. These, like the crossing piers of the eastern transept, have clustered shafts that rise from the pavement and still carry portions of the great crossing arches in three orders, and of the diagonal ribs which were ornamented in a manner similar to those of the apse. In the lateral bays of this patched-up front the archivolt of the aisles and of the triforium gallery still appear where they formerly opened into this western transept. Such transepts were not uncommon in the Rhenish Romanesque churches, but they were uncommon in France.<sup>2</sup>

St. Germer seems to have had considerable influence on the subsequent architecture of its vicinity. This influence is shown in the neighbouring Church of St. Hildevert of Gournay — one of the most beautiful of transitional buildings. St. Hildevert was originally a Romanesque structure with a choir designed like the nave of St.-Germain-des-Prés of Paris,<sup>3</sup> but it was remodelled in the early Gothic time. The remodelling must have taken place soon after the completion, if not during the progress, of the nave of St. Germer, which, in many parts of the work, it closely resembles. The scale of St. Hildevert is smaller, it has no triforium gallery, but many of the structural forms, the types of capitals, and the profiling of the mouldings, are almost identical; and the piers are composed in the manner of those of the choir of St. Germer,

<sup>1</sup> *Ibid.*

<sup>2</sup> Viollet-le-Duc, s.v. *Transept*, vol. ix. p. 236, remarks that western transepts are found only in the eastern provinces of France, as in the cathedrals of Verdun and Besançon.

<sup>3</sup> The south aisle retains two bays of the original Romanesque structure. They are vaulted with groin vaults on the Roman principle, and have square piers with engaged shafts like those of the nave of St.-Germain-des-Prés. A group of shafts to carry the Gothic vaulting has replaced the original single shaft on the choir side; but these two bays retain their primitive round archivolt.

having but three shafts from the pavement, with the shafts of the longitudinal ribs brought down to the triforium ledge (Fig. 44). The lateral vaulting capitals are set diagonally, and the diagonal ribs, as well as the transverse and longitudinal ribs, are pointed. The thrusts of the vaulting are met by heavy walls and piers (which seem to be those of the original Romanesque works) without reinforcement by flying buttresses. Although it has the appearance of a remodelled interior, this choir of Gournay is a beautiful work of art; and the Gothic portions of it are wrought with the mechanical precision that is rarely wanting in the French monuments of the early period.

The vaulting of the nave of St. Étienne of Beauvais (Fig. 45) appears to have been reconstructed in the Gothic form some time after the middle of the twelfth century. Here, as at Gournay, the diagonal ribs are pointed, and the vaults are well adjusted to the Romanesque substructure—which, as before remarked (p. 52), is far advanced in organic design. Since, apparently, no longitudinal rib was used in the primitive vaulting, and consequently no shaft for such a rib was incorporated in the group of the vaulting shafts, the longitudinal rib of this Gothic vaulting is placed on a small shaft in the clerestory, which is supported by a part of the capital that carries the

FIG. 44. — Gournay.

diagonal rib. This mode of supporting the longitudinal rib was much employed during the second half of the twelfth century, as, for example, in the Cathedral of Paris. At the time of the reconstruction of the vaulting other changes appear

to have been made. Among these was the introduction of the triforium arcade substantially reproducing that of St. Germer.

FIG. 45. — St. Étienne, Beauvais.

That this triforium was an interpolation there can hardly be a doubt; for the easternmost bay of the nave, which is more



archaic in character than the rest of the work and seems plainly to retain its primitive design, has no triforium. The preservation of this bay in an unaltered state is due, it may be reasonably assumed, to its position adjoining the transept, where it would naturally be thought unsafe to break the wall with a large opening. The other bays of the primitive nave were unquestionably all like this one in having no triforium openings.<sup>1</sup> A further confirmation of the belief that this triforium arcade was inserted at a period subsequent to that of the original work is afforded by the manner in which it is fitted into the space it occupies. The space beneath the original clerestory string (still undisturbed in the easternmost bay) was too low to allow the use of an arch of full semicircular form. A low segmental arch is therefore employed. But even with this form enough room for the opening could not be obtained without arching the clerestory string over its crown (Fig. 45). It will be noticed, moreover, that the profiling of the clerestory string over the arches is different from that of the string in the older bay; and that this older bay has no triforium string while the other bays have such a string profiled like that of the clerestory. Still further, the facing and jointing of the masonry correspond with the work in the vaulting and not with the older work, while the style of the capitals and bases conforms with that of the vaulting capitals, which were plainly inserted when the vaulting was remodelled—as a comparison of them with the single older one in the primitive bay will show. It thus would seem that while St. Germer was an amplification of the original design of St. Étienne, St. Étienne was in turn remodelled after the improved scheme of St. Germer. By such remodellings of older work, as well as by entirely new constructions, were the Gothic forms in France gradually established.

The nave of Noyon, built some time subsequent to the choir of the same church already noticed, exhibits a fuller apprehension of the possibilities of the new system than any preceding work that has come down to us intact. In the slender proportions of its piers, in the magnitude of its openings, and in

<sup>1</sup> Triforium openings are rare during the early part of the twelfth century except in large churches where the triforium is a vaulted gallery. Thus there are no triforium openings in Gournay, in Bury, or in Cambroune. They occur, however, in the nave of Poissy.

the style of its details it is hardly surpassed by any monument of the twelfth century. This nave, like that of Senlis, was originally covered with sexpartite vaulting, for which its pier system was plainly designed. The most logical portion consists of the three easternmost bays. In these bays the main piers have each the five vaulting shafts that are necessary to support the transverse, the diagonal, and the longitudinal ribs. In the remaining bays the system is lightened by the omission, in the pier group, of the shaft of the longitudinal rib — this rib being carried, as at St. Étienne of Beauvais, on a short shaft in the clerestory resting on a portion of the capital that bears the diagonal rib. The piers of the eastern bays exhibit a peculiarity that we have not hitherto met with; namely, the third order of shafts in the vaulting group (whose function is to carry the longitudinal ribs) do not terminate at the main impost level. In Senlis (Fig. 40) this shaft reaches no higher than those which support the larger ribs of the vault. But the longitudinal ribs of Gothic vaults over a clerestory always (as we shall see farther on) spring from a higher level. This level was in Senlis, as in St. Étienne of Beauvais, the cathedral of Paris, and many other monuments of both earlier and later date, reached by the short shaft before mentioned, which is set on the capital of the lower vaulting shaft. Here at Noyon, however, the lower shaft does not end with a capital at the main impost, but is prolonged to the much higher point from which the longitudinal rib springs. Thus the modes of adjusting the vaulting shafts to the ribs of the vaulting were very various from the first, and we shall have occasion to consider them further in the next chapter.

In Noyon we apparently have the first, in Gothic form, of those splendid vaulted triforium galleries which reach their grandest development in the Cathedral of Paris. The general form of the opening in this gallery is like that of St. Germer, with pointed arches substituted for round ones. It is proportionally a larger opening, its supports are more slender, and the effect of the whole is more elegant. The piercing of the tympanum here takes the form of a trefoil without ornaments. Over this gallery is a second triforium passageway with a diminutive shafted arcade of round arches.

In Noyon and Senlis we have the sexpartite Gothic system, in its early form; in the great cathedrals of Paris and Laon,

which quickly followed, we shall find this system still more grandly carried out.

It will be observed that the monuments thus far examined show that the oblong quadripartite ribbed vault was the earliest, and the most prevalent, form of Gothic vault. The belief that the sexpartite form was first developed, and that it was gradually superseded by the quadripartite, does not appear correct.<sup>1</sup> In one of the most beautiful structures of this early epoch, the choir of the Abbey Church of St. Leu d'Esserent, the two forms occur side by side and are contemporaneous. The whole of this part of St. Leu has survived in good condition. The triforium is a noticeable feature of this design. It is no longer a vaulted gallery, but an elegant arcaded passageway—one of the earliest examples of the true Gothic triforium of the type that is so richly, but hardly more beautifully, carried out in the nave of Amiens. In this monument, too, we have again an external system of flying buttresses. St. Leu is thus one of the earliest extant monuments in which the new structural elements are found complete, and the pointed arch is used throughout, in both interior and exterior.

It will be observed that each of the buildings which we examine has characteristics peculiar to itself. These various peculiarities show a degree of individual independence in the builders that is no less striking than the common allegiance to the leading idea which was, day by day, gaining distinctness, and was rapidly transforming the art of building. We have in this chapter been concerned with the beginnings of Gothic. We may now, in the next chapter, consider the leading structural forms of the larger monuments of the latter part of the twelfth century and the beginning of the century following—the vast cathedrals of Paris, Laon, Chartres, Amiens, Reims,

<sup>1</sup> Viollet-le-Duc, s.v. *Construction*, p. 103, refers to sexpartite vaults as constructed "suivant la méthode des premiers constructeurs gothiques." In the same article, p. 34, he speaks of the porch of Vézelay, with its oblong vaults without groin ribs, as the first monument of transition, and supposes that the next step of progress consisted in reverting to the square compartment with the insertion of the intermediate transverse rib in addition to groin ribs producing the sexpartite vault, and remarks: "Ce sont là des voûtes primitive dites en arcs d'ogive." But when this early part of the *Dictionnaire* was written the author was breaking ground. The numerous small buildings of the Ile-de-France which so clearly exhibit the early Gothic vault development had then been little studied.

and others, in which the highest developments were reached — both structural and artistic. At the same time we shall have to give some further attention to the earlier and smaller edifices — following the steps of progress in the leading parts from their rudimentary to their ultimate forms.

## CHAPTER IV

### GOTHIC CONSTRUCTION IN FRANCE

#### II. LATER STRUCTURAL DEVELOPMENTS

WE have seen that in the primitive Gothic both the oblong quadripartite and the sexpartite forms of vaulting occur contemporaneously, but that the quadripartite form is apparently the earlier. It is true, however, that in the older cathedrals the sexpartite vault is the more common; and since our ideas of the Gothic style have hitherto been mainly derived from the cathedrals, it is not strange that this form of vault should have been regarded as the more primitive. With the closer study of the smaller extant monuments, in which the real beginnings of the style may be traced, this misconception, as well as some others, respecting Gothic art will be dispelled.

Of the greater cathedrals the one in which the Gothic principles were first distinctly and systematically carried out is that of Paris. This wonderful monument, notwithstanding all that it has suffered from violence and so-called restoration, exists to-day in almost complete structural integrity.<sup>1</sup> Here is a vast nave so admirably roofed with stone that the work has lasted intact<sup>2</sup> for seven hundred years, and will probably, if not wantonly injured, last for centuries to come. These vaults are sexpartite, and being nearly contemporaneous with the original vaults of the nave of Noyon, they doubtless show, in the main, how these last appeared. The diagonal ribs are round-arched, while the transverse and longitudinal ribs are pointed.

<sup>1</sup> Notre Dame of Paris not only remains structurally in substantial perfection, but it also retains a large part of its original sculpture. Internally the carving of all the capitals, except a few of those on the ground story, is the genuine work of the twelfth century; while of the exterior the carvings of the tympanums (except a part of the central one), the archivolt, and large portions of the jambs of the great portals remain, for the most part, as originally executed.

<sup>2</sup> The vaults of the choir are perfectly sound; those of the nave have required some slight repairs since their partial reconstruction early in the thirteenth century.

The intermediate transverse ribs are, however, pointed but slightly; and to bring their crowns up to the level of the intersection of the diagonals they are considerably stilted. The crowns of the main transverse ribs are a little lower than those of the diagonals, and those of the longitudinals are lower still. The vaults have, therefore, a distinctly domical form. These various adjustments, by greater or less pointing, stiling, and even by the retention of the round arch where it will serve best, exhibit the flexibility of the Gothic system in an interesting and instructive manner. In vaults of this form the lateral cells are, as I have already (p. 48) remarked, necessarily oblique to the axis of the nave, and their surfaces assume shapes that are difficult to describe. Irregularity of surface is a constant and necessary characteristic of Gothic vaults—even of those of the quadripartite form. Such vaults never have the shape of simple intersecting pointed vaults. Their forms cannot be described in geometric terms; they vary in shape according to the spans, the altitudes, the curves, and the springing levels of the arches that compose the rib system. Hence it is by the forms and relations of these arches chiefly that they must be described. In the vaults of Paris, as in all Gothic vaults, the shells consist of successive courses of masonry which are slightly arched from rib to rib over each triangular cell. The beds of these successive courses are not parallel, but are variously inclined according as the mason found necessary or convenient in developing the concave and winding surfaces engendered by the forms and positions of the ribs to which they had to be accommodated. These courses of masonry have here in Paris, as they have in most Gothic vaults, a considerable inclination near the springing from the longitudinal rib upward toward the diagonal, and they become gradually more level as they approach the crown of vault where they are more nearly parallel. But perfectly parallel they can hardly ever be, since each course forms a portion of a surface that is concaved in all directions. In the early and finest Gothic vaultings this masonry is composed of small stones perfectly faced and closely jointed; and the vaulting of Paris, especially that of the choir, is a model of careful and finished workmanship.

The shafts which sustain this vaulting rise from the capitals of the great cylindrical columns of the ground story, and are

remarkably slender, though well proportioned for their function. In the external system the flying buttresses were, as first constructed, magnificently developed, and were double in a two-fold sense.<sup>1</sup> That is, the piers which divide the double aisles were formerly carried up through the roof so as to form buttresses to the vaulted triforium gallery, and, rising above the roof of this gallery, they received the heads of the double flying buttresses over the outer aisle, and gave foothold to another pair of arches over the triforium gallery. The lower arch of the outer pair was above the aisle roof, while the lower arch of the inner pair was beneath the roof of the triforium. The principle of equilibrium maintained by opposing thrusts was here completely developed; the inert principle no longer governs the construction, though a survival of the former method of building is found in the walls of the aisles and clerestory, which are no longer necessary to the strength of the edifice. The maximum of space for circulation and for prospect was secured by largely reducing the bulk of the supporting members, and if the maximum of area in the external openings was not yet reached it was only because the idea of developing such openings to the utmost had not yet occurred to the minds of the builders.

One marked peculiarity of the Cathedral of Paris is that its piers are not functionally adapted to the sexpartite form of vaulting employed. The adjustments of the piers to the vaults are here just the reverse of that which we find in the nave of Noyon, where the system of supports, fashioned on the alternate principle logically demanded by sexpartite vaulting, is now covered with vaults of oblong quadripartite form. It would seem that in Paris quadripartite vaults must have been intended when the plan was laid out, and that, for some now unknown reason, the sexpartite form was adopted after the structure had been carried up to the springing; for up to this level the system is uniform. The ground-story columns are all of equal magnitude, and each of them carries a group of three vaulting shafts. The incongruity thus presented, in the naves of Paris

<sup>1</sup> The existing flying buttresses of the Cathedral of Paris consist of vast arches which clear both aisles with a single span. These, however, are alterations dating from the early part of the thirteenth century. Cf. Viollet-le-Duc, s.v. *Cathédrale*, p. 288.

and Noyon respectively, between the forms of the vaults and the forms and adjustments of their supports, constitutes a serious defect in each of these otherwise noble structures, as they have come down to us,—a defect which so contradicts the logic of the Gothic system as to leave little doubt that it was in each case the result of a change from the original project. The change was apparently wrought in Noyon at a time but little subsequent to that of the original construction, and in Paris when the structure had reached the height of the springing of the vaults.<sup>1</sup>

But in the Cathedral of Paris, though the same general incongruity exists in both choir and nave, there is a marked difference in the forms and adjustments of their respective vaulting systems. In the choir (the whole of which, with exception of slight restorations on the ground story, and the enlargement, during the early part of the thirteenth century, of the clerestory openings, is the original work that was begun in the year 1163)<sup>2</sup> the vaulting shafts rise from the capitals of the cylindrical columns of the ground story and are varied in their magnitudes in conformity with the weight and bulk of their respective loads. They are built up in courses of small stones, are engaged with the pier, and the central one is incorporated with a pilaster in the manner that had been prevalent in earlier constructions. In the piers which carry the main vaulting ribs, a transverse rib and two diagonals, the vaulting capitals of these shafts are all on the same level. The central capital supporting the transverse rib is set square with the wall, while the lateral ones are set obliquely in the directions of the diagonal ribs which they carry.<sup>3</sup> These lateral capitals support, besides the diago-

<sup>1</sup> M. Viollet-le-Duc, *s.v.* *Construction*, p. 164, remarks that the ill adjustment of the piers to the vaults in the Cathedral of Paris had long puzzled him, but that close investigation at length showed him that the necessities of the sexpartite system were really met by the monolithic shafts which are grouped around every alternate pier in the series which divides the aisles. The piers so reinforced are opposite those of the nave which carry the main ribs of the vaulting. This, however, is hardly a sufficient justification of the whole design as it exists; for this mode of reinforcement does not satisfy the eye, however adequately it may provide for strictly mechanical exigencies of the scheme.

<sup>2</sup> The date of the construction of the choir of the Cathedral of Paris is discussed by M. V. Mortet in his *Étude Historique et Archéologique sur la Cathédrale de Paris*, Paris, 1888, p. 41 *et seq.*

<sup>3</sup> The adjustment of vaulting capitals (established by the Lombard Romanesque



nals, each a small shaft, which rises in the clerestory to carry the longitudinal rib whose springing is at a higher level—an adjustment of great significance, as we shall presently see. In the intermediate piers the arrangement at the springing is different. In each of these the central shaft only has a capital at the level of the springing of the larger vault ribs. The side shafts rise above this to the higher point of springing of the longitudinal ribs, where they receive their capitals. Figure 46

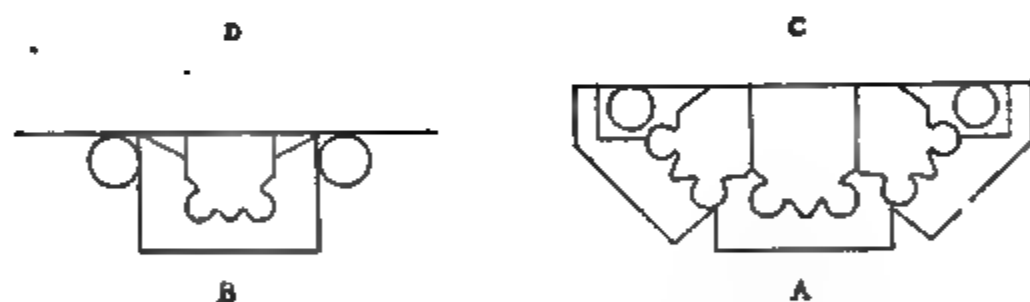


FIG. 46. — Vaulting Imposts, Choir of Paris.

will illustrate these features. In this figure A is the plan of the group of abaci of the capitals of the main vaulting shafts, and the sections of the three ribs which they support; B is the plan of the abacus of the intermediate capital with the section of the intermediate rib, and the sections of the side shafts. C is a perspective elevation of the main group, and D is a perspective elevation of the intermediate group. It will thus be seen

designers and followed by the Romanesque builders of France, as in St. Étienne of Beauvais) was the usual adjustment followed by the early Gothic architects so long as the vaulting ribs retained a square section. With a change in the form of the ribs the manner of placing the capitals was correspondingly changed—as we shall see farther on.

that here in the choir the main and the intermediate groups of vaulting shafts differ in accordance with their respective functions.

But in the nave, which appears to have been completed, all except the extreme west end, by about 1196,<sup>1</sup> the imposts exhibit no such alternation of form in correspondence with the demands of the sexpartite system of vaulting. There are here

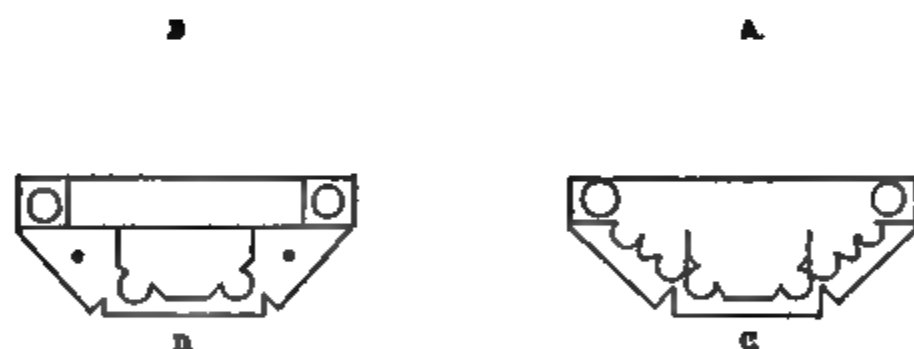


FIG. 47. — Vaulting Imposts, Nave of Paris.

three capitals in each group at the main springing level (A and B, Fig. 47), an arrangement which would be suitable for a uniform system with quadripartite vaulting, but which is ill adapted to the six-celled vaults actually employed. For while in the main group (C, Fig. 47) the abaci are fully utilized, — having to support the three principal ribs of the vault and the bases of the small shafts which carry the longitudinal ribs, — the lateral abaci of the intermediate group have the larger portions, *e*, in the plan D, of their surfaces unoccupied, since no diagonal ribs spring from this group. This

<sup>1</sup> Cf. Mortet, *Ibid.*, p. 46.

is both illogical and unpleasing. The only rib which springs at this level from the impost B being the intermediate transverse rib, the central shaft which supports it is the only one that requires a capital here. The side shafts ought to rise unbroken, as they do in the intermediate group of the choir, to the higher point of springing of the longitudinal ribs. A still further defect of the nave system is found in the vaulting shafts themselves, which are not graduated in size in con-



FIG. 48.

formity with the unequal weight and bulk of their respective loads, but are all of the same magnitude. They are, however, remarkable for their slenderness, which is rendered possible by their being composed of only a

few lengths (in most cases but five) of strong *cliquart* standing free, though close to the pier, as shown in the section Fig. 48.

In the fine neighbouring Church of Mantes, a construction contemporaneous with Paris, which it much resembles, we have another instance of sexpartite vaulting. In this case the vaults and their supports are better related to each other; though the system, for the most part, still fails to exhibit a perfectly logical embodiment of the sexpartite idea. For while the piers are alternately massive and slender, as at Noyon and Senlis, their vaulting shafts are not, as in the earlier monuments, alternately varied in number in conformity with the vault ribs. They are arranged in groups of three in each pier. Those of the main piers, however, start from the pavement, while the intermediate groups rest on the capitals of the ground-story piers, which are single round columns. The shafts of the main groups are larger than those of the intermediate groups, and each main group has the central shaft engaged with a pilaster. There are three capitals at the main impost in each pier, and the longitudinal ribs are supported, as in the nave of Paris, by small shafts resting on the lateral capitals. The western main pier of the westernmost sexpartite compartment<sup>1</sup> is more logically designed. Here the support of the longitudinal rib starts from the triforium ledge,

<sup>1</sup> The bay at the extreme west end, between the towers, has here, as in most other cases, a vault of the oblong quadripartite form.

and rises continuously to the level of the springing of this rib (Fig. 49). The vaulting shafts of the intermediate piers of this compartment rise, like those of the main piers, from the pavement. In the vaulting of Mantes the intermediate transverse rib is round arched, so that in order to get its crown up to the intersection of the diagonals it has to be stilted to nearly the height of the springing of the longitudinal rib.

Sexpartite vaults occur again in the Cathedral of Laon, a building also nearly contemporaneous<sup>1</sup> with the nave of Paris. Here we meet with yet another arrangement of vault supports. The ground-story piers of Laon are, like those of Paris, single round columns whose capitals support the vaulting shafts. But instead of three shafts in each group, an arrangement that does not, as we have seen, conform logically to the sexpartite principle, we have here five shafts in the main groups and three in those of the intermediate piers. An independent support in the main system is thus provided for each rib in the vault (Fig. 50). In other words, the system of Laon is the same as that of the choir of Paris, except that the shafts which carry the longitudinal ribs rise, with the other shafts of the pier, from the ground-story columns, and, in both main and intermediate piers, pass up, without capitals at the main impost level, to the springing of these ribs. The system above the ground story is thus perfectly logical; but the architectural composition as a whole is rendered somewhat unsatisfactory by the heaviness of the shaft groups in comparison with the proportions of the monocylindrical lower piers. It should be remarked, however, that in the two westernmost bays of the choir, which are the earliest and finest parts of the structure as it now exists, the vaulting shafts are more compactly grouped, and are less heavy in effect. But in these bays the shafts of the longi-

FIG. 49. — Mantes.

<sup>1</sup> Cf. Quicherat, "L'Age de la Cathédrale de Laon," in his *Mélanges d'Archéologie et d'Histoire*, Paris, 1886, p. 147; and Viollet-le-Duc, s.v. *Cathédrale*.

tudinal ribs have capitals at the main impost level, as well as at the higher point.

The Cathedral of Bourges, constructed for the most part during the first quarter of the thirteenth century,<sup>1</sup> also has sexpartite vaulting with a peculiar system of supports. The piers are gigantic round columns reaching to the springing level. Embedded in the spandrels of the ground story and triforium arcades, they project beyond the surfaces of these last by something less than a quarter of their bulk. They do not differ in

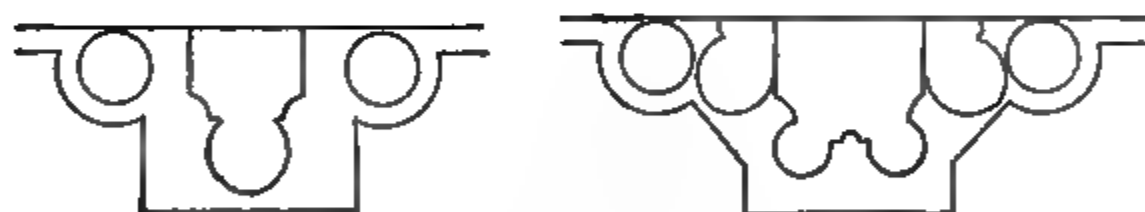


FIG. 50.—Imposts of Vaulting, Laon.

magnitude in obedience to the demands of the sexpartite form of vault, nor is there, on the ground story, any difference between the main piers and the intermediate piers as regards the number and arrangement of the engaged shafts incorporated with them. Above the imposts of the great arcades, however, the main piers are furnished with additional shafts inserted to support the diagonal ribs. The shafts do not differ in size in accordance with their varying functions, nor are they gathered, in the usual manner, into compact groups; they are separated by widely spaced intervals about the great cylindrical surfaces

<sup>1</sup> Cf. Viollet-le-Duc, s.v. *Cathédrale*, p. 294; and s.v. *Architecture*, p. 235.

of the columns. As at Laon, the main shafts only have capitals where the greater vault ribs spring, the supports of the longitudinal ribs rising unbroken to the higher level of the springing of these ribs. But in one respect a greater degree of Gothic consistency is reached in this monument than in the other large cathedrals thus far noticed; namely, in the continuity of the main supports from the pavement upwards in both main and intermediate piers.

Another type of sexpartite construction, dating from the second half of the twelfth century, occurs in the Cathedral of Sens. In this case the main piers are composed in the older manner of those of Noyon and Senlis. They have five vaulting shafts against pilasters rising from the pavement, each of which has a capital at the main impost level. The intermediate pier has a pair of round columns on the ground story, ranged in a line perpendicular to the nave, with a single vaulting shaft rising from the one on the nave side to carry the intermediate transverse rib. The small supports of the longitudinal ribs have no connection with the lower system, but rest independently on the clerestory ledge.

Some exceptional forms occur in the sexpartite system of the easternmost bay of the choir of the small Church of Gonesse (Seine-et-Oise). Here the main piers are of square section with a shaft let into each angle, while a plain pilaster supports the main transverse rib, and round shafts on either side carry the diagonals. The intermediate pier consists, on the ground story, of a pair of round columns, of slender proportions, set, like those of Sens, in a line perpendicular to the axis of the nave.

In Notre Dame of Dijon single round columns, like those of Paris, occur on the ground story, but they carry an alternate system of vaulting shafts appropriately adjusted to sexpartite vaults. These shafts are three in number in the main piers, with only one in the intermediate piers, while the supports of the longitudinal ribs rest on the clerestory ledge. The system of Dijon, above the ground story, is thus substantially like that of Sens.

Of these various modes of adjustment of supports to vaults in sexpartite systems, the most logical and the most architecturally effective are the earliest. In such buildings as the nave of Noyon and the choir of Senlis every member in the vaulting

has its own support in the lower system from the pavement, except in the intermediate piers, where the supports rest on the capitals of the cylindrical ground-story columns. Of the monuments next in chronological order, like Paris, Laon, and Dijon, the comparative lack of structural continuity from the pavement upwards renders them less completely organic architectural compositions; while such a nave as that of Bourges, though exhibiting a perfect continuity of supports, is less logical and elegant in the proportions and adjustments of its structural parts.

In buildings of the latter part of the twelfth century, having uniform systems and quadripartite vaults, the forms and adjustments of the internal supports remain, in many cases, the same as in the earlier edifices of the same class, such as St.-Germer-de-Fly. That is, they have clustered vaulting shafts which rise from the pavement in every pier. But the piers in these later monuments are much diminished in bulk, and are improved in their forms and proportions, while a vigorous and effective system of flying buttresses completes the system, and renders the exterior expressive of the structure within. Of such buildings the little-known Cathedral of Meaux must, in its primitive scheme (Fig. 51), have been one of the most beautiful. Only small portions of this splendid monument remain unchanged to show what the whole design originally was. But of the nave the eastern bay on the south side, and the easternmost two on the north side, together with the two bays on the west side of the north arm of the transept, largely retain their original form. In these parts every arch and vault rib, from the ground story to the clerestory, has a supporting shaft of its own in the compact and elegant pier, — all of the vaulting shafts rising continuously from the pavement. Thus we have in Meaux, by the end of the twelfth century, the uniform type of Gothic structure, with oblong quadripartite vaulting (the type that was first developed in buildings like St.-Germer-de-Fly and St. Evremond of Creil) carried out with a remarkable degree of lightness and elegance, and in a manner that was hardly surpassed at any subsequent epoch.

A very beautiful building, with quadripartite vaulting of this time, is the Abbey Church of St. Yved at Braisne, near Soissons. Here a combination of grouped supports, rising from the pave-

ment, as at Meaux, and supports resting on the capitals of monocylindric columns, as at Paris, occurs. The eastern part of the choir, which has no aisles, is designed in the first manner,

FIG. 51. — Section of System of Meaux.

while the piers which divide the two western bays, where short aisles occur, and two piers of the transept, are of the latter form. The choir and transept, having only very short aisles near the



crossing, do not require flying buttresses; but the nave, consisting of but two bays, has flying buttresses of early form, well adjusted to the thrusts of the vaulting. As in most monuments of the twelfth century, the clerestory and aisle openings are still comparatively small, and the enclosing walls yet retain much of the Romanesque solidity. But the Gothic skeleton is perfectly developed throughout, and the whole design is of that pure, and even severe, type which the finest work of the twelfth century rarely fails to exhibit.

In the beautiful nave of Lisieux we have a quadripartite system, in which round columns occur exclusively on the ground story. The main vaulting shafts rest, as usual in this type of pier, on the capitals of these columns, while the shafts of the longitudinal ribs are brought down only to the triforium ledge. The small, but exquisite, choir of Gisors affords another example of the same general scheme carried out in a still purer style. This choir (Fig. 52) may, in fact, be taken as one of the finest existing monuments of the early Gothic style, in which the ground-story pier has not yet received its final organic development.

FIG. 52. — Gisors.

These various examples serve to show how great are the minor differences exhibited in the early Gothic buildings. No two of them have precisely the same arrangements of structural parts; yet they all manifest a substantial unity of purpose, and

a growing apprehension of the new principles. The differences are due to local circumstances and preferences, as well as to experimentation and versatility of invention. Each locality developed artistic habits and predilections which were more or less peculiar to it; and thus the central influence which went forth from the region about Paris was variously modified. By the mutual influences of these contiguous local schools, more or less mixed forms of art were produced in the Gothic, as is the case under similar circumstances in all other types of architecture. The Cathedral of Sens, for instance, shows the united influences of Burgundy and the Ile-de-France. That of Bourges is a creation of the school of Poitou modified by the central school, while Rouen exhibits the Gothic principles as worked out under the influence of Norman taste. Yet while local peculiarities are marked, though modified by those of neighbouring schools, it is also true that substantially the same features and adjustments are often common to many regions, even to those situated at a considerable distance apart. Thus the type of pier which occurs at Meaux is found also at Rouen, on the one hand, and at Troyes, on the other; while the round columns of Paris are found at Lisieux, at Laon, and at Dijon.

But there are further developments and important characteristics to be noticed in the early Gothic buildings; and it may be well to begin our consideration of these in the piers of the ground story. The changes wrought in these piers constitute one of the most interesting branches of the subject, and afford illustration of some fundamental principles of the Gothic style. The piers of the earlier transitional buildings, made up of square members and engaged vaulting shafts, like those of St. Germer, and the main piers of Noyon and Senlis, could hardly be improved in respect to functional adaptability and expression. But they were inconveniently and unnecessarily bulky. The later piers of this type, like those of Meaux, were much diminished in volume, and were designed with elegance; but the plain round column made a still more slender and convenient support, and this with some additions ultimately gave the most satisfactory form.

The monocylindrical column by itself was soon felt to be

defective in affording no independent supports from the pavement for the various members of the superstructure. Such a column did not partake of the organic composition that now characterized every other part of the structure. Its use implied

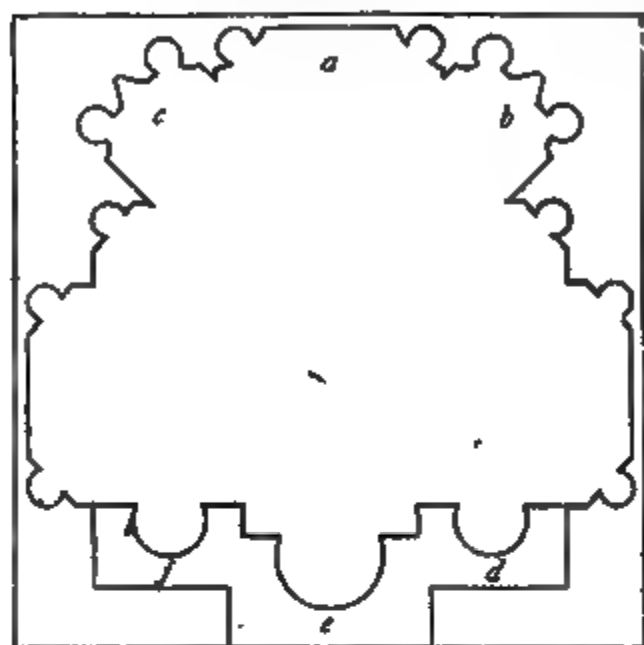


FIG. 53. — Impost of Choir, Paris.

a partial return to a radically different mode of building which had become obsolete. Attempts to improve it were made, and a new and strictly functional form was soon devised, a very early, perhaps the first, example of which may be studied in the nave of the Cathedral of Paris.

The first step in the change appears to have been connected with a new

adjustment to its load of the form of the abacus of the great capital of the round column, an adjustment rendered necessary by the employment of two arch orders in the great arcade, instead of one. In the

choir of the same cathedral the arches of this arcade are of one order, on the choir side, and of two orders on the side of the aisle, as shown in the plan (Fig. 53).

The transverse rib *a* of the aisle vault is so wide that the diagonals *b* and *c*, which are also rather wide, leave little of the abacus surface unoccupied on the aisle side; while the bases of the vaulting shafts *d*, *e*, *f*, on the opposite side, are so much spread

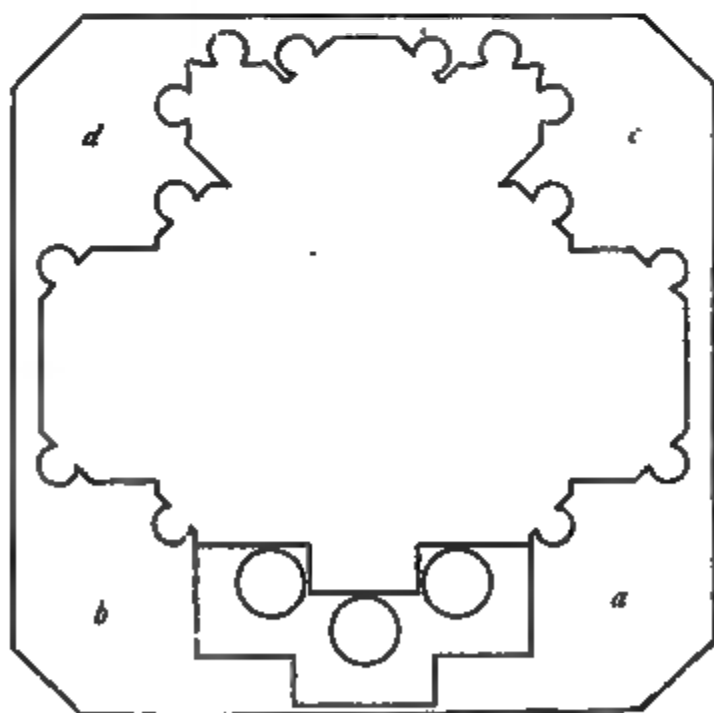


FIG. 54. — Impost of Nave, Paris.

out that the square abacus which carries this compound load fits it sufficiently well. But in the nave (Fig. 54), where the great

arches are of two orders on both sides, and where the vaulting shafts and the ribs of the aisle vault are smaller and more compactly grouped, the square abacus is not so well fitted to its load. Large portions of its surface, *a*, *b*, *c*, and *d*, are left un-

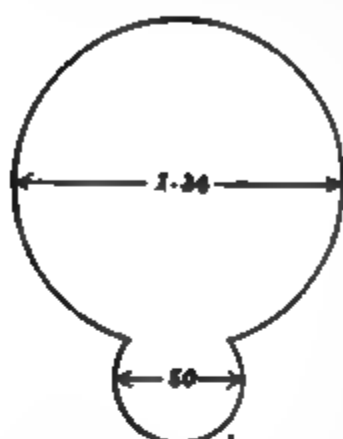


FIG. 55.

occupied, although its corners are cut off, in order, apparently, to diminish this useless surface. With this result the builders appear not to have been satisfied, and a better adjustment was soon reached as the result of a series of experimental changes, which finally gave the lower pier a more organic correspondence with the superstructure, and produced what may be regarded as the typical form of pier of the developed Gothic style.

In this form of pier the vaulting shafts receive independent support from the pavement, and the logic of the transitional compound pier, in a measure lost by the use of the single column, is recovered, while the excessive bulk of the early form is avoided.

The first modification in the nave of Paris occurs in the sixth pier counting from the transept. Here a smaller shaft is incorporated with the great round column to carry the weight of the vaulting shafts (giving the section, Fig. 55), corresponding additions are made to the great capital and to the base, and larger portions are cut off from the corners of the abacus, as shown in the plan (Fig. 56). This was, however,

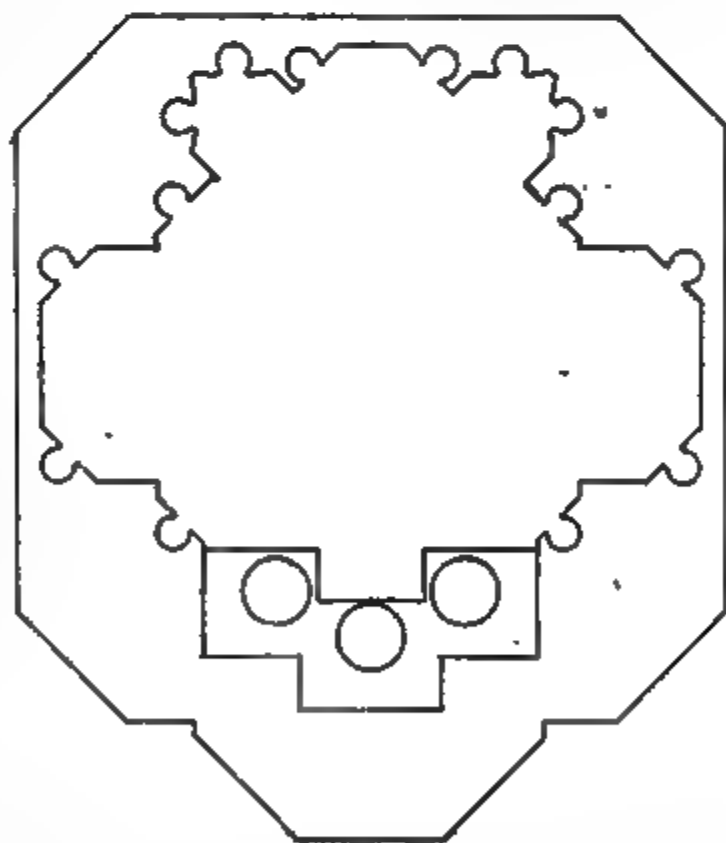


FIG. 56. — Impost of Sixth Pier, Paris.

but a partial improvement. It provided an independent support for the vaulting shafts of the high vaulting, but it left the archivolts and the ribs of the aisle vaulting without such supports. The added shaft could not be happily incorporated with the

original column, and the abacus is still ill adjusted to the load. These faults were immediately recognized. It was seen that if the vaulting shafts were to have separate support in the lower pier, the other members rising from it ought to be supported in

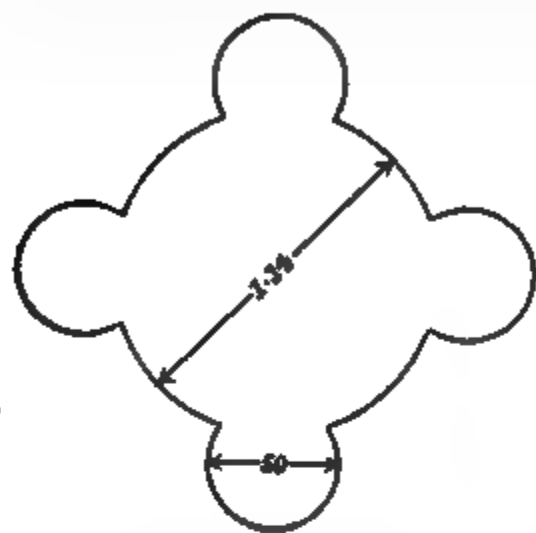


FIG. 57.

like manner. Accordingly in the seventh and westernmost pier, this new idea was carried out, and an organic pier was produced which furnished the model that was thenceforth employed, with many variations of proportions and details, and which attained its highest perfection in the naves of Chartres, Amiens, and Reims. The section of this pier is shown in Fig. 57, its abacus

surface with the plan of the imposed load in Fig. 58, and a perspective view taken from the opposite triforium in order to show as much as can be seen of the upper surface of the abacus and of the form of the load is given in Fig. 59. It

will be seen from the plan that the abacus of the capital of the great central column is now circular, that the abaci of the capitals of the subordinate shafts are square in agreement with the sections of the sub-archivolts and the transverse rib of the aisle vault which they respectively support, and that the engaged column which supports the vaulting shafts has a seg-

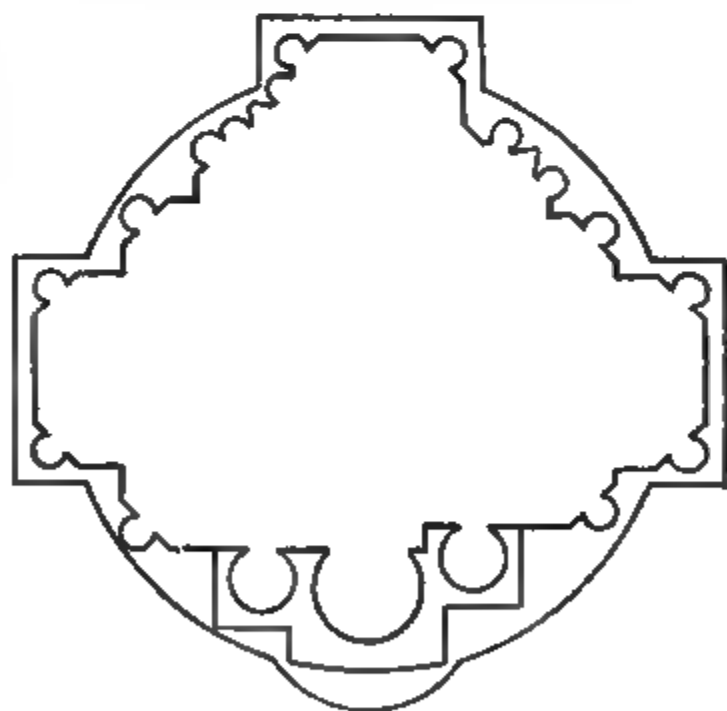


FIG. 58. — Impost of Seventh Pier, Paris.

mental projection which forms a moulded band but not a proper capital, the reason being that no arch springs from it. The vaulting shafts which rise from it are crowned with capitals at the springing of the vaults. It will be observed that the plan

of the impost is unsymmetrical, one of the lateral vaulting shafts advancing forward of the other. This is caused by the necessary thickening of the arcade spandrel on that side in order to reënforce the great piers of the western towers which adjoin

FIG. 59.—Impost of Seventh Pier, Nave of Paris.

this bay. The adjustment of this compound abacus to its load could hardly be improved. There is even less unoccupied space here than on the square abacus of the choir already examined. The form of the whole, as exhibited in the perspective

elevation, is admirable. The smaller capitals, proportionately diminished in height, are finely incorporated with the central capital, and the whole composition is remarkable for beauty and organic expression.

An exceptional form of pier occurs in one bay of the nave of the Cathedral of Laon. In this case a round column is reinforced by five detached monolithic shafts of great slenderness, one supporting each angle of the square abacus, and the fifth being placed under the vaulting shafts (as in the section, Fig. 60). But while by this arrangement the lower pier is materially strengthened, it cannot be considered a good form, for the

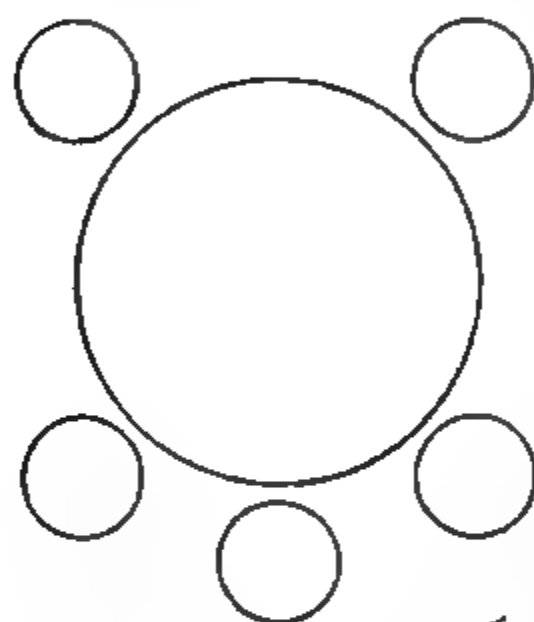


FIG. 60.

reason that the corner shafts are not organically adjusted to the arch orders and vault ribs.<sup>1</sup> It was apparently not felt to be satisfactory, and it was not perpetuated, as it could not logically be, in the Gothic system.

In the Cathedral of Soissons the idea embodied in the sixth pier of the nave of Paris is carried out systematically in the general scheme.<sup>2</sup> Here the engaged shaft, having been a part of the original design, and not, as in Paris, an

afterthought, is better adjusted, and the whole system is harmonious and elegant (A, Fig. 61). The added shaft is more slender than in Paris. Instead of an independent abacus to its capital, the abacus of the great capital, which in this case is octagonal, is carried out so as to cover it. A glance at the illustration will show that the shaft is well adjusted to the superimposed vaulting shafts, and that the whole composition is a great improvement on that of Paris, represented at B in the same figure. The single engaged shaft, besides affording a visible support in the lower system for the high vaulting, has also the function of stiffening the pier in the direction of the inward thrust of

<sup>1</sup> Viollet-le-Duc, *s.v.* *Pilier*, p. 163, refers to this form of pier as a good one.

<sup>2</sup> This cathedral, which dates from the latter part of the twelfth and the beginning of the thirteenth centuries, is strikingly harmonious in total effect, and we shall have occasion to notice other features of it as we go on.

the aisle vaults. This single shaft occurs, also, in the apse of Reims,<sup>1</sup> while in that of the Cathedral of Troyes it is found together with another similar shaft on the opposite side of the pier, which carries the transverse rib of the aisle vault; and in the apse of Mantes the single shaft appears in connection with a slender coved pilaster incorporated with the cylindrical pier.

In the vaults and vaulting systems of the more advanced Gothic of the end of the twelfth and the early part of the



FIG. 61. — Pier of Soissons and Paris.

thirteenth centuries the continuity of support from the pavement upwards becomes constant, and though not every individual member of the superstructure has a support of its own from the foundation, there is always at least one shaft in the ground-story pier for each group of members above.

From the beginning of the thirteenth century the quadripartite vault, now rendered lighter than before, in its rib skel-

<sup>1</sup> M. Enlart, in an instructive paper entitled "*Villard de Hounecourt et les Cisterciens*," published in the *Bibliothèque de l'École des Chartes*, vol. lvi., 1895, cites two other instances, in Saint-Quentin and Vaucelles respectively.



eton as well as in the vault shell itself, was in general, though still not exclusive, use, and the form of pier that was developed in the westernmost bay of Paris became the most prevalent. Though the crowns of the ribs of the early Gothic vaults were sometimes, as we have seen (p. 65, note), on about the same level, as in St.-Germer-de-Fly, they were more frequently very domical. But excessive doming was now systematically avoided, and, though the vault crowns never became level, the crowns of their sustaining ribs varied little in height.

There is one important characteristic of French Gothic vaulting that is rarely noticed, and its real significance has not, I believe, as yet been explained by those writers who have observed it. I refer to the irregular and twisted surfaces already (p. 111) alluded to in the vaults of Paris. These result from the tilting of the longitudinal ribs, by which their springing is raised to a much higher level than that of the main arches of the vault. A prevalent misunderstanding of the Gothic vault has arisen from the supposition that, by taking advantage of the properties of the pointed arch, all its ribs may be made to spring from the same level, and reach the same height.<sup>1</sup> It is, indeed, true that the use of the pointed arch made it possible to accomplish this; but it is equally true that in strictly Gothic clerestory vaulting the pointed arch was never so used. In such vaults the longitudinal rib is always stilted. This fact was noticed by Willis,<sup>2</sup> who merely remarks in relation to it that "it is a very universal arrangement of clerestory vaults, and is productive of great beauty and convenience, but it leads to some difficulty in the form and arrangement of the vaulting surface." Other writers have supposed that this arrangement was intended to provide for largeness of clerestory openings; thus Sir Gilbert Scott says:<sup>3</sup> "The side arches were sometimes stilted, not from any necessity, but merely to afford greater space for clerestory windows." But that it was not adopted because it was productive of beauty or convenience, nor to afford greater space for clerestory windows, a just consideration of the struc-

<sup>1</sup> Cf. Fergusson's *History of Architecture*, vol. i. p. 517.

<sup>2</sup> "Essay on the Construction of the Vaults of the Middle Ages," published in the *Transactions of the Royal Institute of British Architects*, for the year 1842.

<sup>3</sup> *Lectures on the Rise and Development of Mediæval Architecture*, vol. i. p. 63. London, 1879.

tural exigencies involved would conclusively show, even if it were not proved by the fact that the same peculiarity is constant in France long before the clerestory opening is developed so as to fill the whole space beneath the vault. In fact, the

FIG. 62.—St. Leu d'Esserent.

opening occupies but a small portion of this space in all early Gothic buildings, as in Paris, Mantes, Laon, St. Leu d'Esserent, the Collegiate Church of St. Frambourg at Senlis, and many others. Figure 62, a perspective view of one bay of the clerestory

of St. Leu d'Esserent, will illustrate this. Here the springing *a* of the longitudinal rib will be seen to be above the springing *b* of the main ribs by almost half the vertical height of the vault. It will be seen, too, that the intrados of the flying buttress, visible through the window, meets the pier at the same level. It is well known that the thrusts of the great vault ribs are not confined to their points of springing, but that there is a tendency in the arches, when firmly abutted at these points, to rise at the haunches, in consequence of which they require to be reënforced in these parts. Now the method here employed, by which the line *ab* is made to rise vertically to the level *a*, brings the triangular vault surface *bac* into a plane which is inclined to the pier in the direction of the thrust of the diagonal rib; and, as the diagonal rib of the next adjoining compartment, with the corresponding portion of vault surface, is inclined to the same pier in the opposite direction, the obliquity of the pressures is neutralized; and as the haunches of all the ribs are reënforced by a solid filling-in up to this level, a perfect concentration of the thrusts upon the pier is secured—the greatest force of these thrusts falling where the flying buttress is brought to bear.<sup>1</sup> The horizontal section (Fig. 63), taken at the level *a* (Fig. 62), will more fully explain the form of this portion of the vault, and the manner in which the pressures are gathered upon the pier. Here *a*, *b*, and *c* are the great ribs whose thrusts, in the direction of the arrows, are concentrated upon the pier *d*, and are counterbraced by the flying buttress *e*. In other words, the section through the vaulting conoid at about half the vertical height gives the triangle *abc* at A, and not the square *abcd* at B, of the same figure, which is the form it would assume if the longitudinal arch were not stilted.

No single feature could be chosen which would more clearly exhibit the essential principles of Gothic construction. It exhibits, in fact, its governing characteristic—that upon which, more than upon anything else, every other characteristic depends. Without this concentration of the vault thrusts as far up as they extend, the stability of the Gothic system could not be secured. By means of it the cross-strains are all effectively gathered upon

<sup>1</sup> This was apparently the intention, but actually the flying buttresses are not brought to bear precisely on the points of greatest thrust in St. Leu d'Esserent, as will be seen farther on.

the compact pier, which is stiffened by the flying buttresses. It is therefore remarkable that so learned an authority as Sir Gilbert Scott should fail to perceive the meaning of the stiling of the clerestory arch, and should so far err as to affirm that it did not arise from any necessity, but was adopted merely to afford space for clerestory windows.

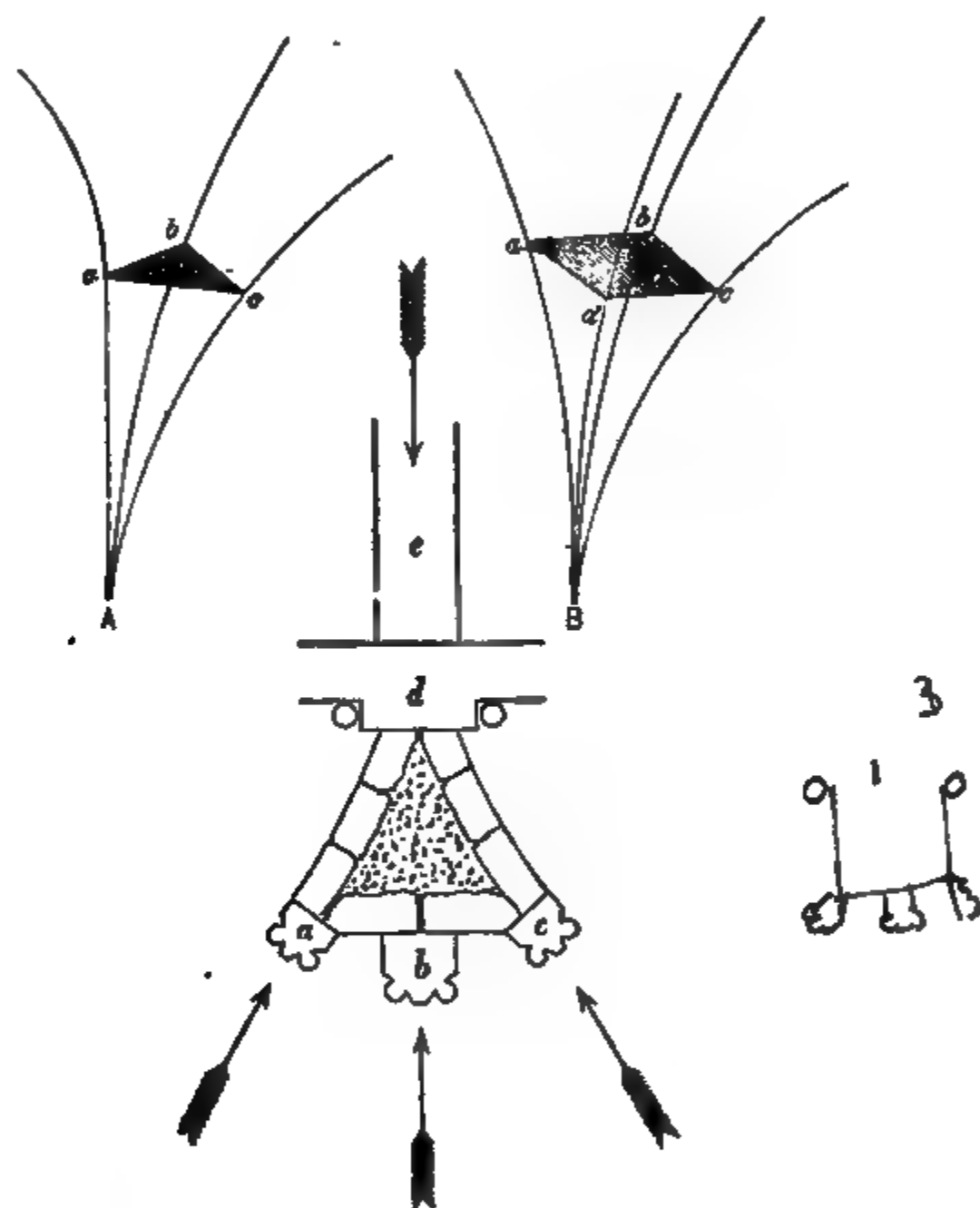


FIG. 63.

How far this form of clerestory was afterwards taken advantage of for larger openings, we shall see when we come to consider modes of enclosure. For the present we must confine our attention to the forms and adjustments of the vaults, the vaulting supports, and the general framework of the buildings in which the Gothic style was assuming its perfected forms.

In these vaults, as in those of earlier date, the only ribs employed are those which have a constructive office; namely, the transverse, diagonal, and longitudinal ribs. Ridge ribs and surface ribs, which were sometimes introduced at a later period, do not appear at this epoch. Of the truly constructive ribs none are ever wanting, nor are suitable supports for them ever wanting in the piers. Throughout the building a structural reason is apparent for every member that meets the eye, though the manner in which the minor structural adjustments are effected continues to vary.

In the nave of St. Leu d'Esserent, whose vaults we have just been considering, the piers are designed after the new manner that was established in the westernmost piers of Paris. They differ, however, in having a complete and symmetrical compound capital terminating the ground-story portion of each; that is to say, the engaged shaft which supports the vaulting shafts has an independent capital at this level, like those of the other three shafts of the lower system. The lower pier has thus the defect of lacking a continuous organic connection with the high vaulting. It is, like the older monocylindrical columns, complete in itself. It is therefore less satisfactory than its prototype of Paris, where the capital is omitted from the shaft that supports the main vaulting group, and the eye is led upward by the continuity subsisting between the upper and the lower parts of the structure. The plan of the great abacus is changed from a circle (its form in Paris) to a square set diagonally with the square abaci of the subordinate capitals projecting from its angles, and set with their sides parallel with the axes of the building. This became the general form of the great abaci in the subsequent Gothic piers of the same type. In this system the shafts of the longitudinal ribs rest on the clerestory ledge, while the three principal vaulting shafts descend to the capital of the lower pier. The nave of St. Leu is but little subsequent in date to the choir and apse. It has the characteristics of the work of the end of the twelfth century.

The nave of the Cathedral of Chartres followed quickly after that of St. Leu,<sup>1</sup> which it closely resembles in many of its fea-

<sup>1</sup> The architecture of Chartres is, for the most part, that of the close of the twelfth century. The lower portions of the choir at least must have been executed at that time. The nave may have been constructed very early in the thirteenth century.

tures, though the scheme is amplified and improved, and is carried out on a vastly grander scale. The general form of the vaulting is more pointed, the diagonal ribs, as well as the transverse ribs, having the pointed form, but the longitudinal

FIG. 64. — Chartres.

rib is round-arched, and its stiling is even more marked than in St. Leu, the springing (Fig. 64) being at more than half the vertical height of the vault.

The survival of this form of arch in the clerestory of a developed Gothic building affords an instructive illustration of

the fact that the pointed arch is not always essential, but that the peculiar manner of adjusting the various structural arches is an even more important characteristic of Gothic vaulting. The almost exclusive use of the pointed arch seems to be, indeed, indispensable to the ideal perfection of the style; for by its use alone, at least in the transverse arches, can the thrusts be diminished to the utmost, and excessive doming avoided in the readiest way. Moreover, architectural harmony calls for its general use in a Gothic design. Yet in many of the finest Gothic buildings the round arch is often met with. It is frequently used for the diagonal ribs, it is always used (in the purest Gothic) in the westernmost transverse rib, where there is a great wheel window in the west front, and where its thrusts are met by the great towers of the façade; but after transitional times it rarely occurs in the clerestory arches as here in Chartres. These are the arches in which, on the common theory, the pointed form is of the greatest utility, because it offers the simplest means of bringing the crown of this narrowest arch of the vault up to the required level. Nevertheless the builders of Chartres chose to retain the round arch here. Why did they do so? It looks as if they had so strongly felt the advantage of stiling as a means of effecting the utmost concentration of the thrusts against the pier that they preferred to make the fullest use of it, even though it necessitated the round arch because the pointed form would in this case have carried the crown too high. The advantage of the pointed arch over the round arch, in consequence of its weaker thrusts, had not to be considered here because the clerestory arches mutually abut each other. But in the greater arches of the vault, which are not thus abutted, the builders have shown their appreciation of the value of the pointed arch by giving to these arches a very acutely pointed form.

The builders of this church went even farther in the use of stiling as a means of concentrating thrusts, and applied the principle to the vaulting of the aisles also. This is unusual. The vaulting of the aisles being on a much smaller scale, and the abutments of the ground story having far greater proportionate bulk and resistance than the abutments of the clerestory, the necessity for stiling hardly exists; and accordingly stiling is of very rare occurrence in the aisles of Gothic buildings. This

stilting of the aisle vaulting of Chartres, though practically unnecessary, affords, however, another proof that this method of construction was not resorted to as a means of obtaining large openings, for the aisle openings here do not nearly fill the bays.

The lower piers of Chartres are alternately round columns with four engaged octagonal shafts, and octagonal columns with four round shafts. The lower vaulting shaft has no capital, but is merely banded by the abacus moulding of the great compound capital, as in the westernmost pier of Paris. The abacus of the great capital has a plan like that of St. Leu, except for the difference occasioned by the omission of a capital in the lower vaulting shaft. Five vaulting shafts, instead of three as at St. Leu, rise from the great capital, the shaft of the longitudinal rib being brought down with the other shafts as in the main piers of Laon. These shafts are of three magnitudes, corresponding with the proportions of the vault ribs which they respectively sustain; and the alternation of the round and octagonal forms of the ground-story system is carried out in them—octagonal shafts being placed over round columns, and round ones over octagonal columns. The adjustment of the great abacus to its load is as perfect as possible, and this ultimate type of Gothic pier received no more logical, or more beautiful, development until the nave of Amiens was built:

The system of the nave of the fine Church of St. Pierre of Chartres, situated in the lower part of the town, is worthy of special notice as an instance of beautiful twelfth-century Gothic. This church exhibits a curious lack of uniformity in its general scheme, even in the apparently contemporaneous parts. It is largely of the same general character as the cathedral, though the proportions are very different; but below the triforium the design of one side is wholly unlike that of the other. In the lower piers of the north side a modified form of the twelfth-century type of compound pier occurs, while on the south side the form consisting of a central column with four engaged shafts is employed. The modification effected in the piers of the north side consists in the use of a single vaulting shaft on the ground story for the high vaulting, instead of starting the whole vaulting system from the pavement. This shaft is treated



like the corresponding shaft in the seventh pier of Paris, and the piers of the cathedral just described, having no capital but merely a band of mouldings from the abaci of the capitals of the ground-story impost. In all respects except the forms of the lower piers the work has the same character and the same profiling on both sides of the nave. It appears, therefore, to be of the same epoch, and affords an unusual instance of disregard of symmetry in composition. Above the triforium ledge the system is uniform, and the whole design is logical and elegant. The vaulting is of the finest quadripartite Gothic character, and the clerestory is of unusual proportionate height. The system (Fig. 65) throughout affords an admirable illustration of the purest Gothic art that immediately preceded the great monuments of the early thirteenth century in which the style culminates.

The Cathedral of Reims, which from the date of its commencement comes among the next works in chronological order, is a vast monument of the same general type as the foregoing. It was begun very early in the thirteenth century, though only small portions of it were executed at this early date. The upper parts of the choir, and the whole of the nave, were built after 1250. Yet the general scheme is that of the earlier epoch. Here the arches of the vault are even more acutely pointed than at Chartres, and the round arch occurs nowhere in the system. The vaulting shafts are finely proportioned, and all descend to the capital of the lower pier, upon which they are well gathered. This pier is of the fully developed form, but its great compound capital is not so well composed as at Paris and Chartres. Its smaller members are not, as in those buildings, diminished in height, but have the same altitude as the large central one, and the main lower vaulting shaft, though it has not a real capital, is banded with carved ornamentation like that of the great capital. But these details belong to the later work of Reims; while, as I have said, the general structural form, though mostly late in execution, is early in idea. It is worthy of notice that some stiling and some winding of surfaces occur in the aisle vaulting here.

We now come to the building in which the Gothic system reaches its utmost consistent development—the nave of the Cathedral of Amiens (Plate 2), which was begun in the year 1220. Not only is this nave the grandest in scale of any in

France, being in height forty-two metres from the pavement to the crown of the vault, and in width nearly fifteen metres from

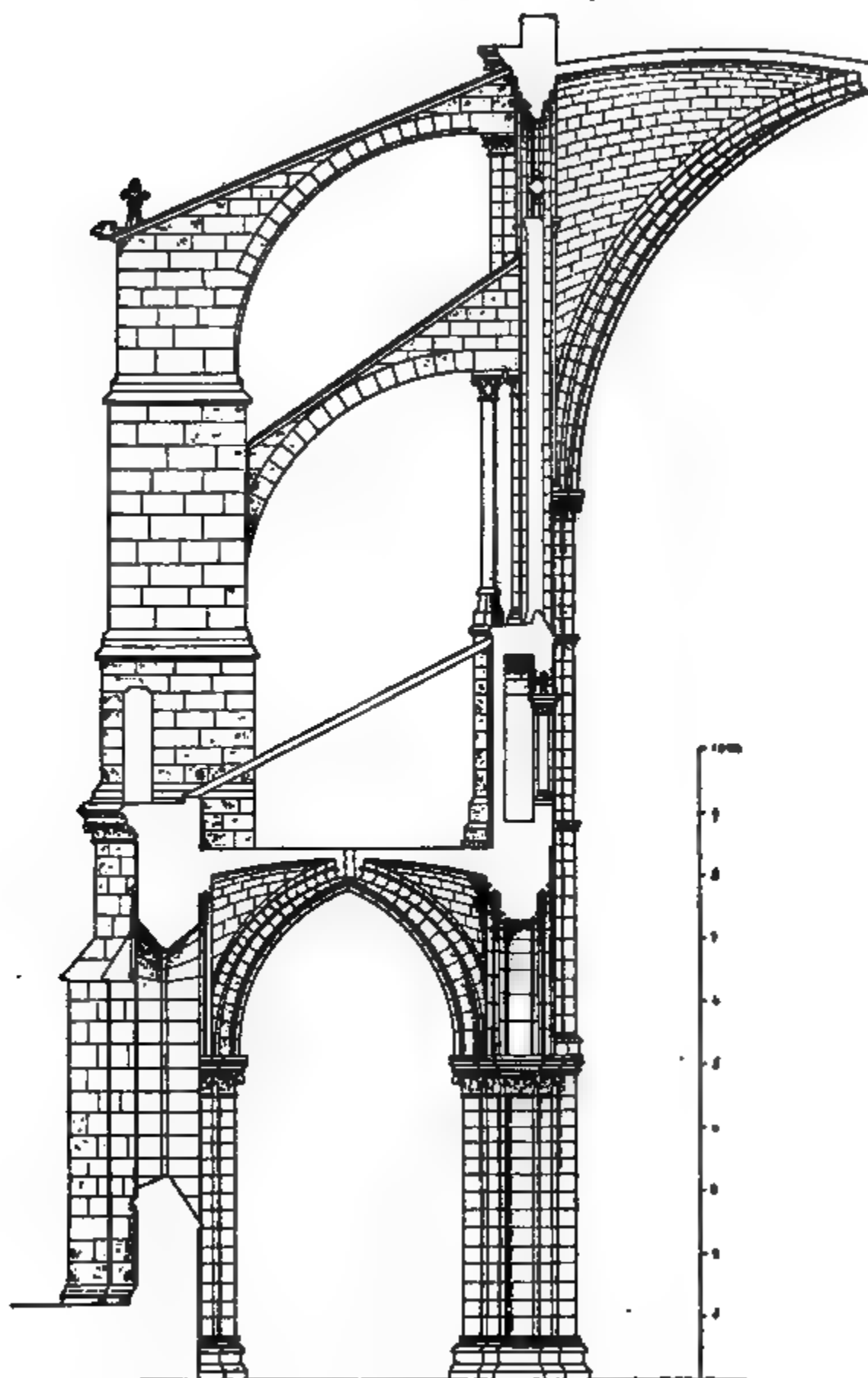


FIG. 65. — Section of System of St. Pierre, Chartres.

centre to centre of its piers, but its design is justly considered as the crowning glory of Gothic art; and it is a grand summing

up of the principles and constructive forms that had been gradually taking shape since the beginning of the twelfth century.

The concentration of the high vaulting upon the pier is here managed by adjusting the longitudinal rib in a manner somewhat different from that of the earlier constructions. The shaft of this rib (Fig. 66 and Plate 2) is not carried so high

above the main impost as before, and hence it might at first glance appear that the stilting is slight. It will, however, be seen that a vertical line is maintained in the surface of the vault for a considerable distance above the head of the shaft. This is effected by allowing the rib to interpenetrate so that its extrados is not freed from the masonry of the vault shell until a point at more than half the vertical height of the vault is reached. By this means the thrusts are concentrated to the utmost, and all parts of the system are gathered into the smallest practicable compass. The main vaulting shaft is now, for the first time in piers of this type, a continuous member of the same diameter throughout, reaching from the pavement to the springing. The shafts of the diagonal ribs rest upon the great pier capitals as before,

FIG. 66. — Amiens.

while those of the longitudinal ribs are brought down to the triforium ledge. This pier, taken as a whole, is a consummate achievement of Gothic art in which structural logic and beauty of design are joined to a degree that was hardly equalled in any other monument of the Middle Ages.

Throughout the system of Amiens the abaci of the capitals are everywhere admirably adjusted in shape to the sections of the ribs and archivolts which they carry; and as these sections were changed in form during the progress of the work, the

abaci of the upper portions are correspondingly different from those of the lower parts. On the ground story the archivolt and aisle-vault ribs, and consequently the abaci, have the square form that had prevailed until the close of the thirteenth century; while in the triforium and clerestory the sections of these members are modified so as to require abaci of various simple polygonal forms.

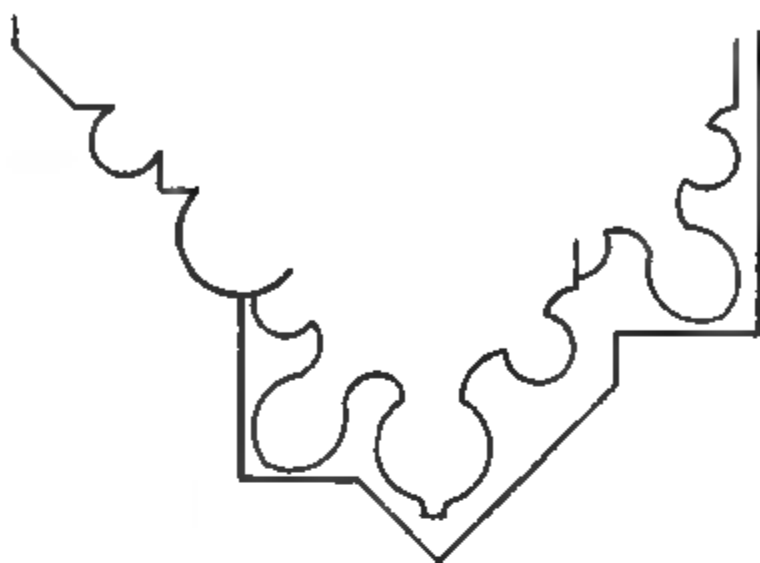


FIG. 67.

An interesting piece of structural logic occurs in the vaulting impost of the westernmost bay. In this bay the longitudinal rib is doubled for the sake of additional strength where the western towers join the nave. In conse-

quence of this the shaft, which in the other bays carries the diagonal rib, has here to be given to the support of the extra rib; and the diagonal rib is added to the load of the great vaulting shaft which carries the transverse rib. In order to prepare the capital of this shaft to accommodate the additional rib, an angular projection is given to the abacus, producing an unsymmetrical form. This will be better understood from the impost plan (Fig. 67), and the perspective elevation (Fig. 68). Thus were the Gothic builders ever ready to admit any irregularities of form that

FIG. 68. — Amiens.

structural exigencies demanded; and it is remarkable that they so managed these departures from regularity that they rarely failed to produce an harmonious total effect.

I have already remarked that no single Gothic building unites all of the perfections of which the entire group of French monuments affords illustration; but of the nave of Amiens it may be said that a more admirable embodiment of Gothic principles can hardly be conceived. Words can convey no just idea of the majesty and harmony of its proportions, or of the refined beauty of its grandly monumental sculptured ornamentation.

The nave of St. Denis, dating from near the middle of the thirteenth century, though on a considerably smaller scale than that of Amiens, is also a fine example of the fully developed Gothic style. Here the diagonal ribs of the vaulting are round arched, and the transverse ribs are but slightly pointed. The vaults are stilted in the manner of those of Amiens. The piers are of the clustered type of the twelfth century in a much improved form. They are somewhat like those of Meaux, only still more compact and elegant.

The enormous and magnificent choir of Beauvais, as it has come down to us, does not exhibit the design of its original architect. In less than a century after its completion,<sup>1</sup> the upper portions began to yield, owing in part, perhaps, to the defective workmanship with which the prodigious scheme had been hastily carried out; and changes had to be made which materially altered its character. The system was originally much like that of Amiens developed on an exaggerated scale. The main supports proving inadequate, it was found necessary to subdivide the gigantic ground-story arches by inserting intermediate piers carrying intermediate transverse ribs; and thus to convert the original quadripartite vaulting into vaulting of the sexpartite form. The monument thus remodelled has survived without essential change; and it stands to-day as an instructive illustration of the folly of exaggerating proportions, and as marking the first departure of the Gothic builders from the sound principles and methods of execution that had previously governed them. The stupendous structure, nevertheless, exhibits some features that further illustrate the fertility of invention of the Gothic builders. Among these is the pier of the ground story, which, though in the main composed like the pier of Amiens, has some points of difference. The central column,

<sup>1</sup> Cf. Viollet-le-Duc, *s.v.* *Construction*, p. 174.

for instance, instead of being cylindrical has a somewhat elliptical section, with its longer axis at right angles to that of the building. The main vaulting shaft is more deeply embedded in this main body of the pier than are the archivolt shafts; while on the side of the aisle a broad pilaster with a group of three engaged shafts occur. The entire section (Fig. 69) gives a form that stiffens the pier<sup>1</sup> in the direction of the thrusts, which in a system of such extraordinary height might have caused deflection in piers of the usual shape. In the transept, however, the second pier from the crossing on each side is like the piers of Amiens, and very elegant in form. The elliptical form is not needed in this position because the pier comes between the more massive pier at the crossing and another massive one intended to support the tower with which the aisle of the transept was designed to terminate. These stronger piers take the main thrusts and relieve the one between them considerably. Thus we have here another interesting illustration of the logic of Gothic design in which uniformity of parts is unhesitatingly disregarded where structural necessity does not demand it. The piers of the apse have, as usual, no lateral shafts; and in front they have each a single slender shaft as at Soissons and Reims; while on the side of the aisle they are powerfully reënforced by three engaged shafts carrying the ribs of the aisle vaulting. Another noticeable feature of this system is the abacus of the great pier capital, which, instead of a square or octagonal form, has a broken plan which exactly corresponds with the impost section. These nice adjustments are managed in such a way as to show that the designer of this building was at once a sagacious constructor and a consummate artist. All those parts of the system which belong to the original fabric are remarkable alike

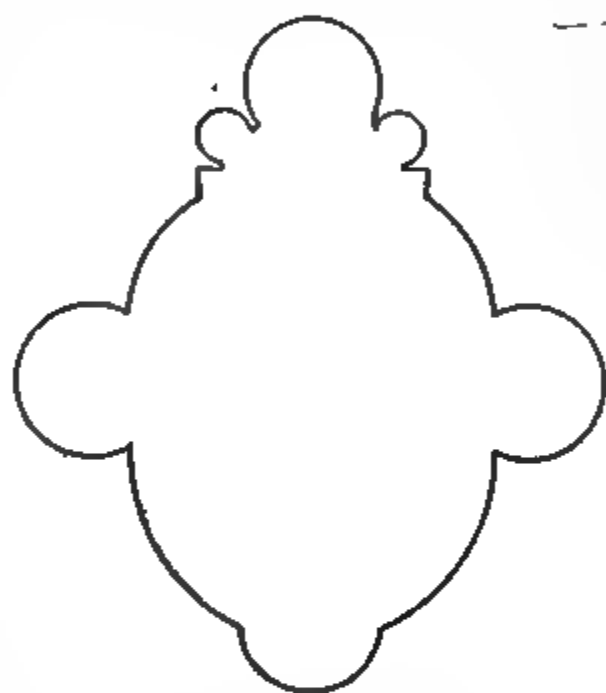


FIG. 69. — Beauvais.

design in which uniformity of parts is unhesitatingly disregarded where structural necessity does not demand it. The piers of the apse have, as usual, no lateral shafts; and in front they have each a single slender shaft as at Soissons and Reims; while on the side of the aisle they are powerfully reënforced by three engaged shafts carrying the ribs of the aisle vaulting. Another noticeable feature of this system is the abacus of the great pier capital, which, instead of a square or octagonal form, has a broken plan which exactly corresponds with the impost section. These nice adjustments are managed in such a way as to show that the designer of this building was at once a sagacious constructor and a consummate artist. All those parts of the system which belong to the original fabric are remarkable alike

<sup>1</sup> I refer to the main piers of the existing sexpartite system. These alone, in the straight part of the choir, belong to the original construction.

for mechanical fitness and for beauty of design. That so great a master should not have taken every precaution against imperfect execution, and should not have been content to work upon a safe and reasonable scale, is much to be regretted.

The aisle system of Beauvais is peculiar and worthy of notice. The vaulting is very acutely pointed, and the longitudinal rib (Fig. 70) is stilted in an unusual way. This rib has no supporting shaft, but is made to penetrate the diagonal rib just below its haunch; and as the longitudinal rib of an aisle compartment is not the narrowest arch in the vault (as it is in the clerestory), and as the diagonal is acutely pointed, the relation to each other of the curves of these two arches is such that no perceptible wind in the vault surface results.

We have now enough considered the leading types of forms and adjustments in the internal vaulting systems of the great French churches of the best epoch, and we may pass to the consideration of the forms of the external supports which complete the skeleton of the Gothic structure. We have seen (p. 78) that the builders of the choir of St.-Germer-de-Fly introduced an abutting arch against the piers of that early structure; but that this was placed beneath the aisle roof, and that it was thus both ineffective and invisible. It is impossible to say how soon after this the true Gothic flying buttress springing over the roof of the aisle was brought into existence; but one of the earliest remaining examples of this important and characteristic member of the Gothic system is that of the Church of St. Martin of Laon. The pier buttress (*a*, Fig. 71) is here a plain, square-edged mass of masonry reenforced by the flying buttress (*b*) which springs from the great buttress of the

FIG. 70. — Beauvais.

troducted an abutting arch against the piers of that early structure; but that this was placed beneath the aisle roof, and that it was thus both ineffective and invisible. It is impossible to say how soon after this the true Gothic flying buttress springing over the roof of the aisle was brought into existence; but one of the earliest remaining examples of this important and characteristic member of the Gothic system is that of the Church of St. Martin of Laon. The pier buttress (*a*, Fig. 71) is here a plain, square-edged mass of masonry reenforced by the flying buttress (*b*) which springs from the great buttress of the

aisle (*c*). The flying buttress is a plain half-arch heavily loaded with masonry brought up to a right line which slopes a little less steeply than the chord of the arc, and is covered by a flat coping. The massive lower buttress (*c*), which rises through the aisle roof, is prepared to receive the flying buttress by the set-off (*d*), and being carried over the transverse arch of the

FIG. 71. — St. Martin, Laon.

aisle, it abuts against the pier at the springing of the vaults. The vaults are thus effectively braced above and below; but the construction is needlessly heavy. More lightness and elegance of form were attained in the nearly contemporaneous flying buttresses of the choir and apse of St. Germain-des-Prés (Fig. 43, p. 100). Here the intrados of the arch is bevelled on each edge, and the pier buttress has an engaged shaft with a



fine capital of the early type. This is perhaps the earliest instance of a shaft in this position, which became a constant feature of the developed Gothic. Flying buttresses of still lighter construction occur in the apse of St. Leu d'Esserent (Fig. 72), which dates apparently from about 1170. The pier buttress does not in this system rise above the head of

FIG. 72. — Apsé of St. Leu d'Esserent.

the abutting arch. The curved wall of the apse presents, therefore, an unbroken surface above this level, while below it the arrangement is like that of St. Martin of Laon. The outer buttress has three set-offs and rises to a considerable height above the roof of the aisles before the arch, which penetrates its inner face, is sprung. The straight slope is not here continued to the outer face of the buttress, but in-

tersects the flat coping, with which the outer portion of this buttress is finished at a considerable distance within the edge. In this case no portion of a lower abutment is visible above the aisle roof.

Some improvements upon these forms are shown in the buttresses (Fig. 73) of the nave of the same building, which is a

FIG. 73. — Nave of St. Leu d'Esserent.

little later in date. The buttress of the apse, by the number and depth of its set-offs, has a slightly sloping general outline, as if the builders had considered that this form gave increased efficiency. The same inward inclination of the outer face of the upright buttress occurs frequently, though not constantly, in other early buildings. It was found, however, that this was unnecessary; and accordingly the outer faces of these buttresses

of the nave of St. Leu rise more vertically, and have a more equal volume at different levels. They also exhibit the further improvement of a gabled, instead of a flat, top. This form is better adapted to the shedding of rain-water, and is also more pleasing to the eye. The pier buttress, here as in the apse, does not rise beyond the flying buttress, the clerestory wall above being unbroken throughout its length. This is the case, also, in many other transitional Gothic buildings—as in the apse of St. Remi of Reims and that of St. Germain-des-Prés of Paris. This pier buttress is not, as in the preceding examples, in the form of a continuous pilaster-like member. It has a deep set-off near the roof of the aisle, supported by a substructure (*a*, Fig. 73) which rises through the roof and is carried over the transverse arch of the aisle vault. Beneath this set-off the buttress is pierced so as to afford a passageway.

Other instances of early flying buttresses still extant, and showing the same general characteristics, are those of the apse of Gonesse (Seine-et-Oise) and the nave of Auvers. Many early flying buttresses were ill adjusted to the pressures of the vaults from want of accurate knowledge where they should abut. Repeated experiment was required before the precise points upon which they should be brought to bear was ascertained. The flying buttress of the nave of St. Leu effectually meets the higher pressures exerted by the vault, but those nearer the springing were not securely braced. The piers began apparently to yield soon after the completion of the work, and it was found necessary to insert a second arch beneath the first in all of the buttresses along the nave except those nearest the east and west ends, where enough abutment is afforded by the towers. Experience at length showed that the lateral pressures of vaults cannot be concentrated upon any single point, but that they may be gathered upon a line extending for a considerable distance from the springing upwards.

In the buttress system of the nave of Noyon (Fig. 74), which appears to date from the time of the reconstruction of the vaults early in the thirteenth century, the flying buttress assumes an improved form in being deeper—thus covering a greater vertical extent upon the pier against the thrusts. The intrados of the arch, which in St. Leu is on a level with the impost of the longitudinal rib of the vaulting, is here at Noyon

considerably below this level, while its superimposed masonry reaches higher than in St. Leu; and instead of a shallow pier buttress reaching only as high as the arch, there is a vigorously salient one carried up to the top of the clerestory wall. The flying buttress is thus brought to bear upon a line (already in part fortified by a pier buttress) rather than upon a point. What is the form of the structure under the aisle roof, I do not know; but as this nave has a high vaulted triforium gallery, there is probably an abutment of some kind carried over its transverse arches to meet the pier at the springing of the vaults. It may be added that this buttress system has proved effectual. The vaults appear to have stood securely for more than six hundred years. The straight sloping back of the flying buttress, as well as the top of the upright buttress, here assumes the gabled form; and a small finial upon the gable marks perhaps the first attempt to render pleasing by ornament this important functional member. But while the flying buttress of Noyon is an improvement on those of the preceding form in offering resistance to the vault thrusts for a greater distance up and down the pier, it is not altogether an improvement architecturally. It has not the elegance of most other early Gothic buttresses. It is even heavier than that of St. Martin of Laon.

FIG. 74. — Nave of Noyon.

In the apse and choir of Soissons, which dates from about the beginning of the thirteenth century, still further improvements in the form of the flying buttress were made. Here (Fig. 75) two arches were established in the original design, and these

are so adjusted that the thrusts of the vaulting are completely met. The lower arch abuts against the springing, and the upper one meets the pressures of the haunches. Thenceforth the employment of two arches in the buttress system became practically constant. The top of the inner half of the great outer buttress here at Soissons is carried up above the back of the flying buttress, adding by its weight to the stability of the whole. The upper surfaces all have the gabled form, and over each gable end an elaborate finial is placed. The pier buttress has an engaged shaft with base and capital under each arch—as in the earlier instances of St.-Germain-des-Prés of Paris and St. Remi of Reims.

The magnificent buttress system of the Cathedral of Meaux, which is nearly contemporaneous with Soissons, has (Fig. 51, p. 121) the double form that is necessitated by the existence of double aisles—as in the original system of the Cathedral of Paris already described (p. 112). At Meaux the inner part of the system has two arches as at Soissons, while the outer part has but one arch.

FIG. 75. — Apse of Soissons.

Not long after were constructed the grand and unique flying buttresses of the Cathedral of Chartres, in which the two arches are connected by an elegant shafted arcade. These are at once powerful abutments and effective architectural features.

But the finest development of the flying buttress, in a single-aisled building, is that of the nave of the Cathedral of Amiens (Fig. 76); while the fullest expression of the Gothic spirit in this member as adjusted to a double-aisled construction is found in the choir and apse of Reims (Fig. 77).

The evolution and adjustment of the pinnacle, which is a

conspicuous feature in the developed style, was rapid after the advantage of weighting the top of the buttress was recognized. At Chartres, where the superimposed weight terminates in the form of a truncated pyramid on an oblong base instead of a gabled coping like that of Soissons, we get what appears to be one of the intermediate steps of this development. But at Chartres, as at Soissons, the weighting mass of masonry is placed over the inner portion of the buttress. It was, however, presently seen that it would be more effectual if placed farther out. Accordingly at Amiens it is set flush with the outer face of the buttress. Here the form was originally (as shown in Fig. 76)<sup>1</sup> that of an upright rectangular mass of masonry, ornamented on each face with a shafted arch and a richly sculptured cornice, crowned with a steep pyramid having crocketed angles, and terminating in a finial. The Gothic pinnacle here stands forth in its most monumental form, and in essential completeness. But the inventive faculties of the Gothic artists were fertile in variations upon this feature (in which, as in all other features of the system, constructive and ornamental functions are admirably combined), and among the grandest products of their inventive skill are the magnificent pinnacles of the apse of Reims (Fig. 77), which date from about the

FIG. 76.—Nave of Amiens.

<sup>1</sup> The upper portions of the buttresses of the nave of Amiens have been remodelled in the Flamboyant style with exception of the one next to the transept, which retains its original character in all but the pinnacle. This pinnacle, though altered, is of an earlier and more simple type than the rest; and it seems to justify the restoration given by Viollet-le-Duc, s.v. *Cathédrale* (Fig. 20, p. 329), from which that of my illustration is taken. The rest of the illustration is drawn from a photograph.

middle of the thirteenth century. In the design of these the inner portion of the top of the buttress is capped with a gable, while the outer portion consists of an open shafted canopy, surmounted by a massive octagonal pyramid with four lesser pyramids covering the angles of the square base on which they rest. Thus were the forms of the external supports, no less than those

of the interior, gradually developed as the structural exigencies of the system were more and more perfectly apprehended, and in such a manner that architectural beauty, as well as functional fitness, was ever secured. These hard-working abutments thus became at length the most strikingly ornamental features of the Gothic exterior, insomuch that their important mechanical office has been sometimes lost sight of. In French Gothic, however, after 1160 the stability of the structure is absolutely dependent upon them.

## CHAPTER V

### GOTHIC CONSTRUCTION IN FRANCE

#### III. MODES OF ENCLOSURE AND GENERAL FORMS

FROM the vaults and their internal and external supports, which together constitute the essential structure, we may now pass to the consideration of modes of enclosure.

In the transitional buildings massive walls filled the spaces between the piers much as they had done in Romanesque constructions. The openings remained small and the round arch was not seldom retained in them, as at Noyon and Senlis. The nave of the Cathedral of Paris affords a good illustration at once of the early forms of wall and opening, and of the changes that were quickly introduced, here and elsewhere, as the Gothic idea began to take more complete form in the minds of the builders. Of the two bays of the clerestory of that building shown in Fig. 78,<sup>1</sup> the one on the beholder's right illustrates the design according to which the whole nave was originally built.<sup>2</sup> It is the bay adjoining the transept, and the great pier *c* is one of the four piers of the crossing. In this bay the clerestory window is a simple pointed arched opening above the level of the springing of the vaults; and, although larger than such openings had usually been in Romanesque design, it is nevertheless only an opening in a wall in which the area of the solid is still greater than that of the void. Beneath the clerestory is a circular opening into the upper triforium, or the space between the vault of the triforium gallery and the timber roof which covers it. This opening is divided by a simple form of tracery which is worthy of notice as one of the earliest extant instances of tracery. The whole design exhibits a good deal of massive wall space, and an eye not quick to recognize the main structural features might

<sup>1</sup> This being a perspective view, looking upwards from the opposite triforium, all the forms appear a little foreshortened.

<sup>2</sup> Cf. De Ghihermy, *Itinéraire Archéologique de Paris*, pp. 80, 81.



not readily perceive that this is really a building whose stability depends primarily not upon its walls, but upon its framework.

Early in the thirteenth century the original vaults of this nave, which had been completed towards the close of the preceding century, were damaged by fire and had to be repaired.<sup>1</sup> It would appear, indeed, that their lateral cells were wholly

FIG. 78. — Clerestory, Nave of Paris.

reconstructed and somewhat changed in form; for the original longitudinal ribs, which remain in place, are considerably below the present vault surfaces<sup>2</sup> (as may be seen in Fig. 78). Con-

<sup>1</sup> Cf. Viollet-le-Duc, s.v. *Cathédrale*, p. 292.

<sup>2</sup> They are so in some, though not in all, of the bays. Indeed, great and very puzzling variations occur in the different bays of this clerestory. For instance, in the first five bays on the north side of the nave, counting from the transept, the original longitudinal ribs are surmounted by other arches, in each of which the extrados is more acutely pointed than the intrados, which follows the form of the original rib, — thus giving a more pointed shape to the vault cell. But the sixth, seventh, and eighth bays have their old ribs raised by stilting to the new level. In the sixth and seventh bays the outline of the window head is not concentric with its archivolt, but is rendered more pointed by a singular filling in between the tracery and the archivolt, — as in Fig. 79.

temporaneously with this repairing and remodelling of these nave vaults, great changes were making in other parts of the building, chiefly in the clerestory, in conformity with developments that had elsewhere taken place. Among these developments was the enlargement of apertures, and their subdivision by mullions and simple forms of tracery. The clerestory apertures of the nave of St. Leu d'Esserent (Fig. 80) show the first step in this direction — which consisted in the grouping of two pointed openings with a circular one under an enclosing pointed arch. The rudiments of this form of compound opening reach back to times anterior to those of all Western Romanesque art, though they rarely, if ever, occur

† in any variety of Western Romanesque.

Adumbrations of it are found in the architecture of Central Syria as early as the sixth century — as in the Church of Qalb-Louzeh, where two round-arched openings are grouped with a circular one (Fig. 81), but without an embracing arch. In the later Byzantine style the same grouping frequently occurs with the addition of the embracing arch, as in Fig. 82, from a small church in Athens. In the transitional Gothic

FIG. 79.

it first, perhaps, appears internally, as in the triforium of St. Germer (Oise), and later in the triforium of the nave of Noyon, — where a trefoil takes the place of the circle in the piercing of the tympanum. In the clerestory of Noyon two round-headed windows are placed side by side, while the tympanum above remains solid. But now a new and far-reaching development of these germ forms had begun, the progress of which was most rapid. In the openings of the clerestory of the nave of St. Leu, coupled pointed arches are surmounted by an open circle having a thinner plate, or panel, of stone pierced with a six-foiled opening. The plane of masonry pierced by the main openings is in retreat from the face of the clerestory wall, and a moulded and shafted arch flush with this wall throws the whole design into two orders. The scheme is very beautiful in its monumental simplicity. Similar openings, with more enriched archivolt, occur in the nearly contemporaneous clere-

story of the choir of Soissons. In such examples we have the beginnings of the typical Gothic opening in which a large space is subdivided by mullions and tracery of graceful forms and elegant profiles; and in these members no less than in other parts of the Gothic building, constructive exigencies were, as we

FIG. 80. — St. Leu d'Esserent.

shall presently see, the moving cause of change in the forms. Even the enlargement of the opening was due primarily to the nature of the construction rather than to any original desire for great size, though the value of magnitude was doubtless more and more appreciated as constructive development went on.

The apertures of the clerestories of St. Leu and of Soissons were followed almost immediately by those of the apsidal

chapels of the Cathedral of Reims (Fig. 83), which date from about 1212; and, though designed on the same general scheme, have an entirely new character. For here, instead of a solid tympanum with a circular piercing, we have the earliest form of tracery proper produced by building up an open framework of two pointed arches and a circle enclosing a sexfoil. Thus, instead of grouped openings, as at St. Leu and Soissons, we have a great single opening divided by slender bars of stone. These bars are not finished with flat surfaces, as if the openings were merely cut through the former plain tympanum, but are worked into

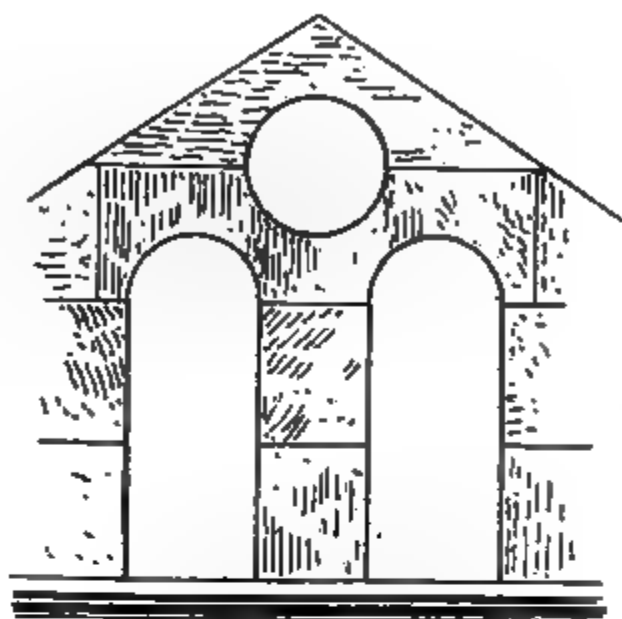


FIG. 81. — Qalb-Louzeh.

agreeable forms, giving sections composed of rounds and hollows associated with fillets (Section *b*, Fig. 184, p. 335). The rounds or roll mouldings become shafts by the addition of bases and capitals on the jambs and mullions. Thus was the so-called plate tracery converted into true Gothic or bar tracery.<sup>1</sup>

The great change referred to above, which was wrought in the clerestory of Paris soon

FIG. 82. — Byzantine Church in Athens.

<sup>1</sup> M. Demaison, in an instructive article entitled "Les Architectes de la Cathédrale de Reims," published in the *Bulletin Archéologique* for the year 1894, refers to the Abbey Church of Orbaix as having openings like those of Reims of an earlier date. The Church of Orbaix was begun, he finds, about A.D. 1200, and presumably by the same architect (Jean d'Orbaix) who designed the earlier portions of Reims.

after its first completion, consisted mainly in substituting enlarged and divided openings, like those of the apse of

FIG. 83.—Apsé of Reims.

Reims, for the smaller ones of the primitive design. But these new openings of Paris mark one further step in the

development of tracery. The tracery of Reims, as will be seen (Fig. 83), is made up of many small pieces of stone jointed as in ordinary arch construction; while that of Paris is composed of few larger pieces. In this way it became possible to make the tracery bars much more slender and yet to secure equal strength. One of these inserted clerestory windows is seen in the left bay in Fig. 78. To effect the change the pretty circular opening over the triforium gallery, seen in the restored bay to the right, had to be sacrificed, and a string-course was inserted far below the springing of the vaults, and down to this level the splays of the new openings were brought. The tracery is even more simple than that of Reims, the sexfoil within the circle being omitted; but the work is remarkable for its lightness and elegance. The form of the window head is changed from that of the original window into a more acutely pointed arch which is nearly concentric with the arch of the remodelled vault above it.<sup>1</sup> Both of the new arches disagree strikingly with the old longitudinal rib which remains undisturbed. Such instances of the survival of portions of original work where occasion has given rise to alteration are numerous in mediæval work; and they add much to the interest and historic value of these monuments.

It may be questioned whether this alteration of the clerestory windows of Paris was an improvement to the building. The harmony and severe beauty of the old design, with the unique circular opening of the upper triforium, are somewhat impaired by the change. Moreover, while the tracery of the new openings is, in its mode of construction and in the slenderness of its parts, an advance upon that of Reims, the openings themselves, in their relationship to the building, are less Gothic in character, since they do not fill the whole space between the piers.

The utmost enlargement of the opening appears first to have been reached in the apsidal chapels of the ground story. In some early transitional buildings, as in St. Denis and Senlis, the openings in these chapels fill almost the whole space, but they are as yet too small to need dividing members. In the

<sup>1</sup> Many other particulars concerning the changes that were made in this building at this time are given by Viollet-le-Duc, *s.v.* *Construction*, and elsewhere; but those noticed above are, for the most part, not referred to by him.

apse of Reims the opening fills the entire space between the piers, and is so large as to require the dividing mullion and tracery.

It was at length seen that, with the now complete organic framework which gave strength to the building, the walls might be practically dispensed with, and that the openings might always be made equal to the whole space between the piers. With the recognition of this fact the interest in the art of colour design in stained glass quickly increased, and it became the universal practice to fill the aisles and clerestory with resplendent fields of translucent mosaic, the walls being wholly suppressed from a height only a few feet above the pavement.

The mullions and tracery by which these great openings were divided were necessary to support the expanses of enclosing glass against the force of winds; and the greater the area of the opening, the larger was the number of dividing members required to afford this support. Thus was developed the elaborately subdivided, and highly ornamental, tracery which enriches the great openings of developed Gothic buildings.

This enlargement of the aisle and clerestory openings, to the extent of doing away, except at the base of the ground story, with all solid masonry beneath the vault rib, resulted in an important simplification of the structure—the archivolt of the opening and the longitudinal rib of the vault becoming one and the same member, while the supporting shaft of this arch became a member of the window jamb, as in the clerestory of Amiens (Fig. 66 and Plate III). In Amiens, too, another noticeable development occurs; namely, the uniting of the clerestory and triforium into one grand composition by the prolongation of the longitudinal rib shafts and the shaft of the central mullion downward to the level of the triforium string. Each bay of the triforium is thus subdivided into two lesser bays (Plate III).

In the developed Gothic style the triforium opening is of two main types. The first consists of a range of four shafted arches, as at Chartres, Soissons, and Reims; while in the second we have three arches embraced by a great arch with a pierced tympanum, as at Paris; and the same scheme is often doubled, as at Amiens. The single embracing arch usually occurs where the triforium is a vaulted gallery.

Plate III

AMIENS CATHEDRAL  
Clerestory of Nave

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In France the triforium, when not a vaulted gallery, is a narrow passageway enclosed by a thin wall that shuts off from view the timber roof over the aisle vaulting, and gives a monumental aspect to this part of the structure that would be wanting were this timber roof exposed to view.

We have now examined the leading structural developments of French Gothic buildings, so far as concerns their longitudinal bays. It remains to examine corresponding developments of the eastern and western terminations, the forms of transepts, and the forms and adjustments of towers and spires. The traditional semicircular apse, greatly enlarged, and, in the perfected style, changed to a polygonal plan, is the most characteristic eastern termination of the larger French churches. The square east end of Laon Cathedral is the result of an alteration made some time after the original completion of the edifice, and is exceptional among the larger Gothic edifices of France. In churches of smaller size, however, square east ends are numerous, and occur at all periods of Gothic art, as at Noël St. Martin, Marissel, Gournay, Bury, Gisors, St. Vincent of Senlis, Auvers, and many others. Yet the round, or polygonal, form remains the most common, and may be regarded as most truly characteristic.

A more appropriate, or more beautiful, eastern termination than the Gothic apse could hardly be conceived. No part of the edifice does more honour to the Gothic builders. The low Romanesque apse, covered with the primitive semi-dome, and enclosed with its simple wall, presented no constructive difficulties, and produced no imposing effect. But the soaring French *chevet*, with its many-celled vault, its arcaded stories, its circling aisles, and its radial chapels, taxed the utmost inventive power and entranced the eye of the beholder.

We have already (pp. 70, 73-74) traced partially the early development of the Gothic apse. We may now examine some further characteristics of its form in both early and later stages of advance. We saw (p. 74) that the apse of St. Germer is divided into five cells by ribs converging on the crown of the transverse rib of the first bay of the choir (Fig. 84). This adjustment of the ribs is the same that had been established in more primitive apses where, as in Berzy-le-Sec, described on p. 70,

the half-domed vault survives with the addition of salient ribs. But it is not a good adjustment, for the thrusts of these ribs are

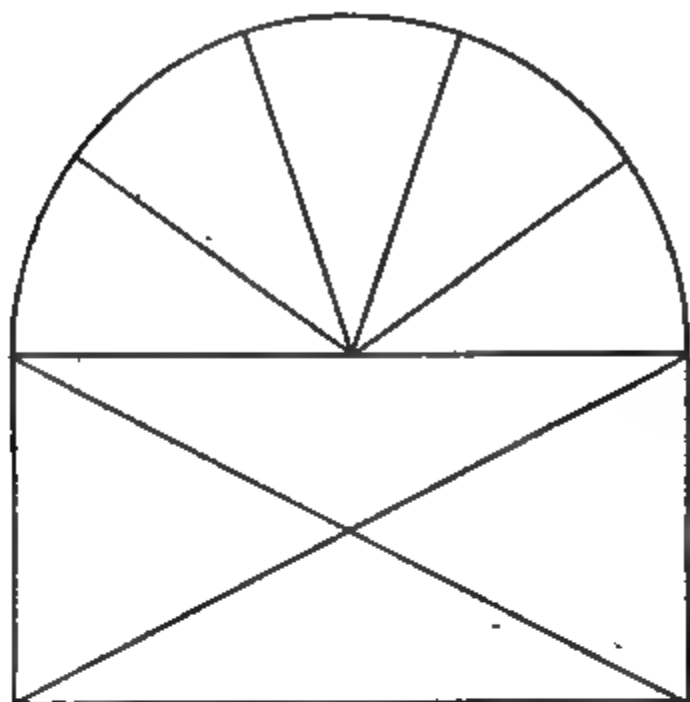


FIG. 84. — St. Germer-de-Fly.

against the transverse rib at a point which is not strengthened by any abutting members. Where the transverse rib is very heavy, as in St. Germer and the small earlier churches to which ribbed apses are adjusted, the structure may be secure; but with the lighter ribs of the more advanced monuments it is less so. And whether actually secure or not, this mode of

adjustment is objectionable, because it does not afford visible evidence of stability. In the apse of Noyon, which is perhaps the next earliest Gothic apse on a large scale now extant, we have a different arrangement in which effective abutment is secured. Here, as in St. Germer, the vault is divided into five cells, by ribs converging on the transverse rib of the first bay of the choir, but they are met by two abutting ribs rising from the opposite direction. In order to effect this abutment the first rectangular vault of the choir is made tripartite. That is, instead of the usual diagonal ribs of such a vault, which would intersect in the centre of the

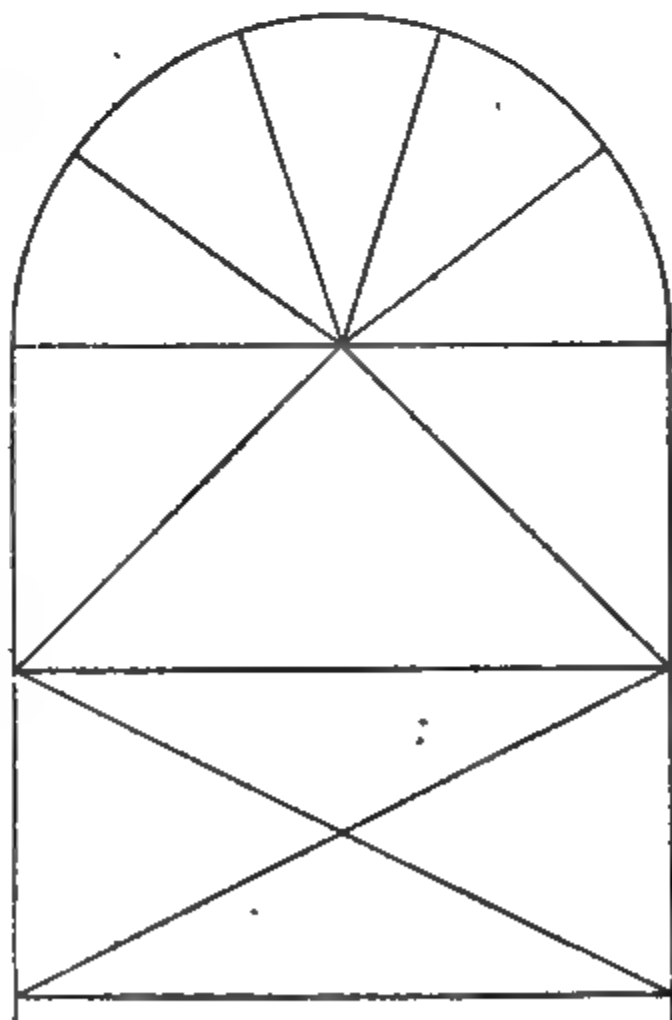
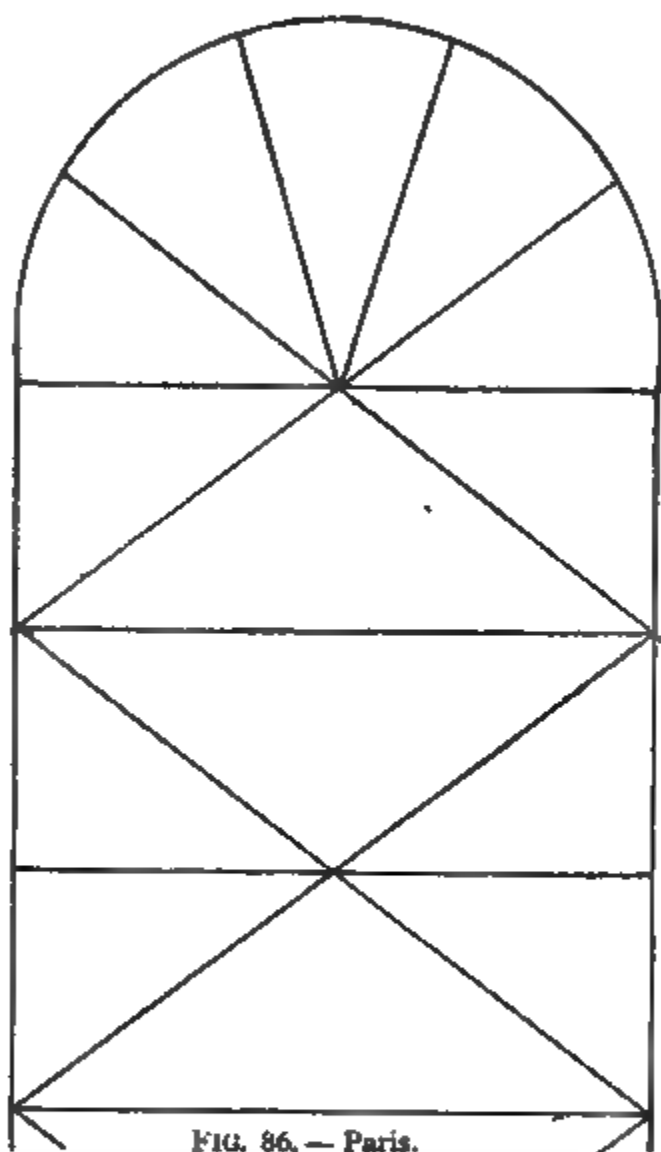


FIG. 85. — Noyon.

compartment, oblique ribs are sprung from the western piers only, and are brought to bear on the crown of the eastern transverse rib (Fig. 85). A similar arrangement occurs in the Church of St. Leu d'Esserent and in the cathedrals of Auxerre and Rouen.

The vast and majestic apse of the Cathedral of Paris followed soon after that of Noyon; and it furnishes another type of structure in respect to the relationship between the vault of the apse and the vaulting of the choir. The apsidal vault of Paris is, like that of Noyon, in five cells, with its ribs intersecting in the same manner on the first transverse rib, and abutted as before by ribs in the adjoining rectangular bay brought to bear against their thrusts. But in this case the arrangement is a natural one, which it is not in Noyon. For in Noyon the system of vaulting in the choir is quadripartite, and hence the ribs of the vault adjoining the apse could not naturally furnish an abutment for those of the apse. In order to effect the abutment this vault had to be made tripartite — architectural uniformity being sacrificed, in a truly Gothic spirit, to constructive exigency. But in Paris (Fig. 86) the vaulting is sexpartite, and the plan is so arranged that the apsidal vault joins the half of a sexpartite compartment at the intermediate transverse rib. This half-vault is naturally tripartite, and so its ribs intersect at the point on which the apsidal ribs meet, and the needed abutment is secured. The same arrangement occurs at Sens and at Bourges; and for a sexpartite system no better arrangement could be devised



But for quadripartite vaulting, as at Noyon, this arrangement, though logical and effectual in point of construction, is not a good one, because it needlessly breaks up the uniformity of the choir vaults. The marked disparity which it occasions between the easternmost compartment of the vaulting and the other compartments was a defect which the builders were not slow to correct. A better adjustment of the apsidal ribs joining a quadripartite system was developed at Chartres (Fig. 87) and afterwards perfected at Amiens. It will be seen that at Noyon (Fig. 85) the plan of the apse is about semicircular,

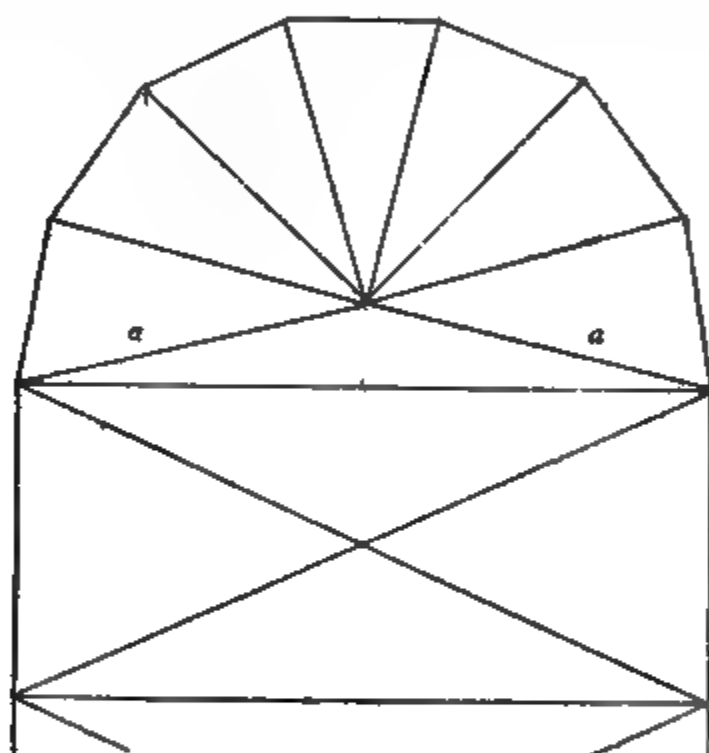


FIG. 87. — Chartres.

so that the ribs of its vault are of equal length, being radii, and thus naturally meet on the crown of the transverse rib which is at the centre. At Paris (Fig. 86) the form of the apse is an arc of more than a half-circle, hence its centre is eastward of the crown of the transverse rib. Nevertheless the apsidal ribs meet, as before, on that crown. In order to effect this they have to be lengthened, and are necessarily of unequal length. At Chartres the plan of the apse is a polygon set out on about a half-circle, and thus the crown of the transverse rib is near the centre of the curve; but the apsidal ribs are not brought forward to this point, they are made to intersect on a point considerably eastward of the centre. This is done in order to allow place for two additional ribs which

spring from the piers that carry the transverse rib and, converging on the point where the other ribs meet, effectually meet their thrusts. By this means the stability of the vault of the apse is rendered independent of the vaulting of the choir. The awkward expedient of constructing a tripartite vault for the sake of abutment was thus no longer necessary; and the vaulting of the choir could henceforth be uniformly quadripartite. The introduction of the two additional ribs gave the apsidal vault eight, instead of five, cells; and the plan of the apse thus

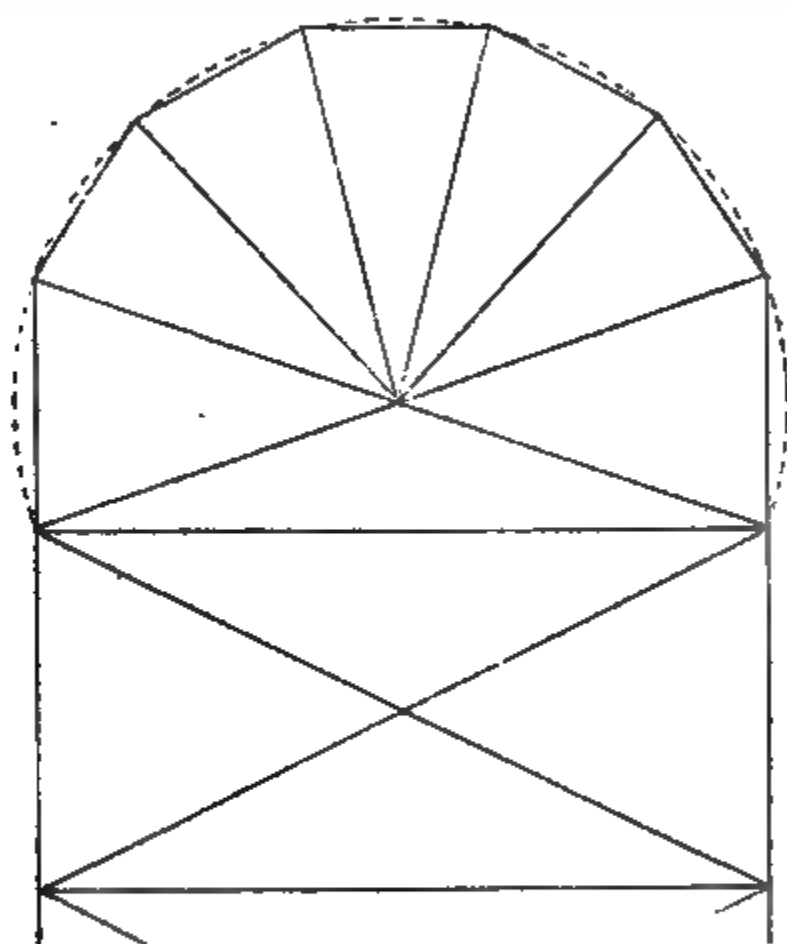


FIG. 88. — Amiens.

became a polygon of seven sides. This was a great improvement, but a completely satisfactory form of apsidal vault was not yet reached. For the placing of the point of intersection backward of the centre still necessitated an awkward inequality in the lengths of the ribs. A final solution of the difficulties, in this part of apsidal vault construction, which had embarrassed the earlier builders was reached at Amiens. In the plan (Fig. 88) of this great apse, the polygon is set out on an arc of more than a half-circle, and thus room is gained for the abutting ribs without removing the point of intersection from the centre. These ribs, and all the other ribs of the vault, are radii of the arc; and

are hence of equal length, and the effect of the vault is harmonious.

In elevation the bays of the apse are substantially like those of the nave and choir, except that they are narrower and, in early monuments, on a curved plan. The triforium and clerestory openings have usually fewer subdivisions than the wider ones of the straight part of the edifice. In early buildings, like Noyon and Senlis, they are often wholly undivided. Among the finest earlier Gothic apses is that of the Church of St. Remi of Reims, which dates from about 1170.<sup>1</sup> Below the clerestory it closely resembles the apse of Paris, its lower piers, its vaulting shafts, and the forms of its ground-story and triforium arcades (like Paris it has a vaulted triforium gallery) being almost identical in design. It is, perhaps, a little in advance of the apse of Paris in general lightness of construction. As in the Cathedral of Noyon, there is a second triforium, and it is noticeable that this is united with the clerestory by shafts reaching through both. St. Remi thus presents an early instance of that treatment of clerestory and triforium which is carried out so grandly in the nave of Amiens.<sup>2</sup> The clerestory and the vaulted gallery have, in each bay, a group of three openings of which the central one is the largest; and this group fills the whole space between the piers. This type of opening occurs in a few other early Gothic buildings — as in the clerestory of the south transept of Soissons, and a simpler form of it, consisting of only two openings, in that of St.-Germain-des-Prés. It is not, however, a distinctly Gothic type on account of the necessary survival in the spandrels of portions of the clerestory wall. In fully developed Gothic buildings it is rarely, if ever, found.

The apse of St. Remi affords another illustration of the fact that the Gothic style was but an evolution out of the Romanesque. Externally the plain rounded form and the general quietness of the design recall the older style, while the bold flying buttresses, and the enlarged openings, bespeak a structure on Gothic principles. It also shows again that Gothic architecture developed from within — the internal changes

<sup>1</sup> Cf. Demaison, *Les Architectes de la Cathédrale de Reims*, p. 25.

<sup>2</sup> The same treatment occurs, also, in some other early monuments, as in the choir of St.-Germain-des-Prés of Paris.

necessitating those of the exterior; and that the Gothic expression is given to the exterior by the large structural features, while as yet no corresponding modification of lesser details takes place (Figs. 89 and 90).

FIG. 89. — St. Remi, Reims.

We have seen (pp. 62, 71) that the vaulting of the apsidal aisle presented difficulties which had embarrassed the early constructors. These difficulties, which grew out of the curved trapezoidal forms of the compartments to be vaulted, were at



length, as we have also seen, wholly conquered in the apse of St. Denis. In addition to what has been thus far shown concerning such vaults, one or two further illustrations of the flexibility of the Gothic system may be given here. In the Cathedral of Paris the double aisles are continued around the apse, and the trapezoidal vault compartments of the inner and outer aisles

FIG. 90.—St. Remi, Reims.

thus adjoin each other concentrically (Fig. 91). This gives a great length to the side A of the outer compartment which, on the usual method of vaulting such compartments, would have proved awkward to manage on account of the excessive height to which a single arch would reach. To avoid the necessity of such an arch, the architect of this apse adopted a novel and

ingenious method whereby all of the arches of the curved sides of the vaulting are rendered of nearly equal span. This result is obtained by dividing the longest side of the inner compartment into two parts by the introduction of a pier B, and the longest side A of the outer compartment into three parts by the introduction of two supports at the points A'. No intersecting diagonals are employed in the vault, but in place of them ribs are sprung from the piers C to the pier B; and from the piers BB' to the piers A', thus dividing the inner compartment into three, and the outer compartment into five, triangular

- A

FIG. 91. — Paris, Vaults of Apsidal Aisle.

cells of nearly equal magnitude. These cells are then vaulted over in the following manner: starting from the angle A' of the cell BA'B', arched courses of masonry are carried across from rib to rib until the crowns of these ribs are reached in the line D, then starting at the angles BB' similar courses are sprung, in a direction perpendicular to the first, from the rib BB' to the diagonals B'A', A'B', until the crowns of these diagonals are reached, after which they abut against the line D of the first system, and thus fill in the triangle. Every part of each cell is sensibly domical; and the irregularities of surface, resulting

from the conditions of the problem, have an agreeable effect upon the eye which no merely geometrical vaulting can produce.<sup>1</sup>

The difficulty arising from the great length of the outermost arches in double apsidal aisles was afterwards met in another way in the Cathedral of Le Mans. In this instance the trapezoidal form is avoided in the outer compartments by the adoption of a plan giving a series of radiating square vaults with the triangular intervals filled with vaults of triangular shape — after the manner of the vaulting of Aix-la-Chapelle before noticed (p. 34).

Apsidal chapels are almost always included in the plan of the Gothic apse. These are usually segmental or polygonal in plan, and vary considerably in development. In some cases, as at Senlis, St. Leu d'Esserent, and Soissons, they are but slightly pronounced, while in others, as at Noyon, Reims, Amiens, and Beauvais, they become of much importance. The chapels occupy the spaces between the buttresses, which, in the earlier monuments, as Noyon and Soissons, have considerable salience beyond them, while the chapels of the later cathedrals, as those of Reims, Amiens, and Beauvais, are so large that the buttresses are largely taken in as dividing walls. After the beginning of the thirteenth century the chapel on the axis of the building was frequently much enlarged and dedicated to the Virgin. It was often planned like a small nave without aisles, having two or more rectangular bays and an apse, as at Amiens. But in general the apsidal chapels are but diminutive apses of one story constructed on the principles of the larger apse.

The combination of apse, apsidal aisle, and apsidal chapels is magnificent in the highest degree; and is altogether peculiar to Gothic. The interior and exterior effects of the apse are among the most remarkable of any that Gothic art presents. Of the earlier interiors, which include all of the characteristic parts, hardly any are more admirable or more typical than that of the Church of St. Leu d'Esserent (Fig. 92), dating from the second half of the twelfth century. While those of Chartres, Reims, Amiens, and Beauvais, whether viewed from the interior or the exterior, are among the grandest achievements of human genius.

<sup>1</sup> Cf. Viollet-le-Duc, s.v. *Voute*, p. 512.

The plans of nearly all large French churches include transepts. Bourges, among cathedrals of the first magnitude, is exceptional in having none. In the Romanesque and in early Gothic churches the transept, though often largely developed,

FIG. 92. — Apse and Aisle of St. Leu d'Esserent.

is generally near the east end. But in the developed Gothic style the choir is greatly extended in length, and the transept is thus brought forward toward the west end. The forms and arrangements of transepts are very various. In some large buildings, as in the Cathedral of Paris, the transept is of slight projection. In others, as in Noyon and Laon, it is more de-

veloped. In some cases it is without aisles, as at Noyon and Paris. In others it has an aisle on both sides, as at Chartres, Amiens, and Reims. Again, as at Sens, we may find an eastern aisle, but no aisle on the west side. In some cases, as at Sens and Laon, chapels open out of the eastern aisle. The French transept usually terminates in a square end; but in some early churches the extremities have the apsidal form. At Noyon both transept arms have round ends, while at Soissons one end is round and the other is square. The round ends of Noyon are without aisles, but the round end of Soissons has an aisle. The structural system of the transepts does not differ from that of the main body of the church, but consists of a shorter series of bays in all respects similar to those of the nave. The round end, when adopted, is formed by a continuation of the side bays, with their horizontal divisions, and internal and external members around the curve, as in the main apse. But the square transept end is furnished with an appropriate façade substantially like that of the principal front. The portals, and other external features of the transept, are not seldom so largely developed, and so richly adorned, as to almost equal, as at Paris, and sometimes even to surpass, as at Chartres, those of the main façade. The transepts of Chartres are provided with vast and unique porches, embracing triple portals, which are among the grandest architectural productions of the Middle Ages.

Of the majestic aspect of the great west end of a Gothic cathedral in France too much in praise can hardly be said, and yet here we see little of those peculiar structural features which are so marked in the main body of the building. The great French façades are, in fact, not seldom criticised on the ground that they somewhat disguise the true character of the edifice which they enclose; and it is, perhaps, true that an entirely satisfactory design for a western façade was hardly ever realized in a large Gothic church. Yet in Paris, Amiens, Reims, and other monuments we have west fronts of not merely great magnificence, but also, for the most part, of appropriate character. The defects of these compositions have been exaggerated, and have largely grown out of a mistaken notion respecting truthfulness in architectural design. It may be said in defence of them that it is not an imperative principle that a

façade should wholly express the form of the building which it encloses. The façade rarely can do this except in buildings of a very simple character. But it may be affirmed as a principle that unnecessary or wilful concealment of structural forms is an architectural offence, and hence those horizontal arcades which connect the towers in some of the great Gothic fronts, masking the gabled roof behind them, may not seem wholly justifiable. It should be remembered, however, that the gabled timber covering over a Gothic nave is not the true roof. The vault beneath it is the real roof of the monument; and the form of the vault is not contradicted by the horizontal arcade. For a cross-section of the vaulting, taken through the centre of any bay, gives an approximately horizontal line with which the arcade sufficiently agrees. Moreover, the arcade itself has great value in its place between the towers—which are the governing features in any general view of the façade. To the eye this arcade has the function of binding the towers well together, and it forms a noble crowning feature to the central bay. As for the towers themselves, it would be hard to conceive more appropriate or effective terminations for the aisles of a great church edifice. And yet, from the front view, they quite conceal the whole of that wonderful system of flying buttresses which reveals so much of the distinctive character of Gothic art. It is, however, generally easy to get a view which commands the whole structural system; and in such a view we are impressed with the majesty and appropriateness of the mighty towered western front. In fact, criticise it as we may, it is hard to see what better could be done. Without the towers the front would be wanting in that emphasis and dignity which befit a great monument of communal, as well as ecclesiastical, importance.

In some instances, however, as at Eu (Seine-Inférieure), the towers are omitted; and in the façades of smaller churches they are generally wanting, as at Nesles, Auvers, Heronville, and Champagne (Fig. 93). In these cases a tower is placed over the crossing, as at Champagne, or beyond the aisle in front on either the north or the south sides, as at Chambly (Oise) and at Champeaux (Seine-et-Marne). In such façades the whole structural form of the building is expressed as fully as it can be.

The practice of terminating by towers the western extremities of the aisles of large churches was established in the

Romanesque period. An interesting instance of an early Romanesque façade with such towers is afforded in the Abbaye-aux-Hommes at Caen (Fig. 94). The towers are here marked by vigorous pilaster buttresses of two orders, which rise without set-offs to the level of the horizontal cornice, above which they are carried up, without buttresses, three stories higher.<sup>1</sup> The façade is in three stories, marked, between the buttresses, by

FIG. 93.—Champagne (Seine et Oise).

plain string-courses. In the ground story three round-arched portals of moderate dimensions, each of three orders, open into the nave and aisles respectively. In the central bay three round-arched windows of two orders occur in each of the upper stories; and a single one of the same kind opens through the wall of each of the upper stories of each tower bay. A low gable over the central bay, with a diminutive arched opening in

<sup>1</sup> These towers are now crowned by Gothic spires of the thirteenth century. The original tower roofs must have been in the form of low square pyramids.

its face, completes a design which, though well composed, is simple even to baldness.

The development of the façade was less rapid than that of other parts of the building, and it was not until the end of the twelfth century that the Gothic impress was distinctly set upon it.

FIG. 94. — Abbaye-aux-Hommes, Caen.

The germs of the Gothic front are, however, plainly visible in the Church of St. Denis, where the larger dimensions of the deeply recessed portals, the presence of the pointed arch in some of the openings, the large wheel window, and the sculptured enrichments constitute a wide departure from Romanesque design.



A further approach to the Gothic type is found in the façade of the Cathedral of Senlis (Fig. 95), which dates from the second half of the twelfth century. Although in its main elements it is almost the same as the front of the Abbaye-aux-



FIG. 95. — Senlis.

Hommes, its features are richer, and it has a new expression which bespeaks the vigorous Gothic genius. Here similar square-edged tower buttresses of two orders divide the front into three bays. The central bay is divided into three stories by simply moulded string-courses, the upper one of which

breaks around the towers and their buttresses. On the ground story the whole width of this bay is occupied by a splendid recessed portal of five orders with pointed arches. This is, perhaps, the earliest of those unparalleled portals which became such magnificent features of the developed French Gothic. Over this portal is a great pointed arched opening of four orders, which must, it would seem, originally have included some simple dividing members, but whose present shafts and tracery cannot belong to the original design. In the third story is a small circular opening of three orders, also filled with tracery of a later date, and on either side of it a pointed niche of two orders with a statue in each. A smaller pointed door-

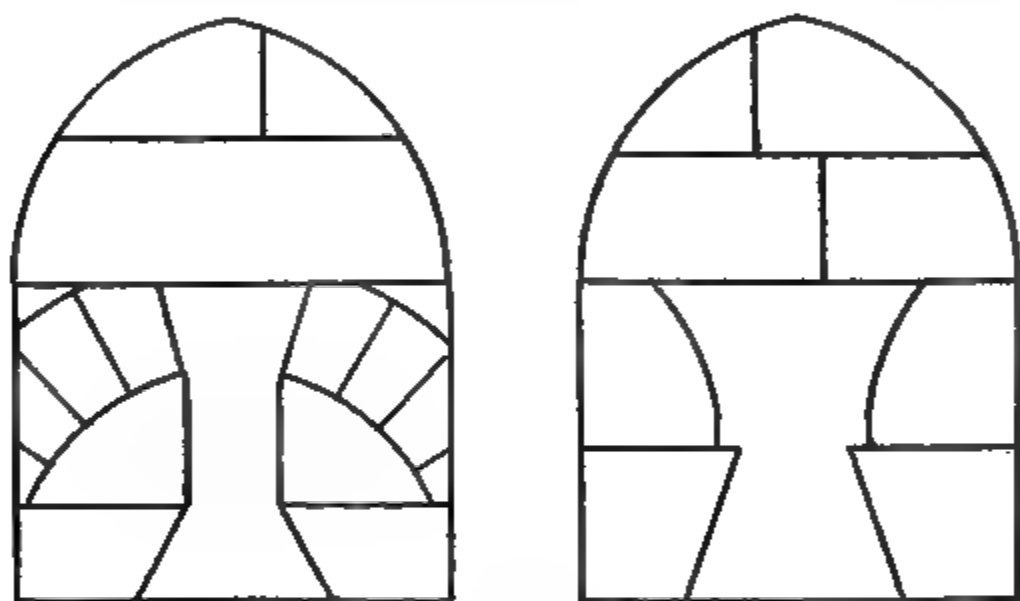


FIG. 96.—Senlis.

way of four orders, with a stilted arch and a pierced tympanum of curious design, opens through the ground story of each lateral bay. The tympanums are in two planes—the inner one being solid; and the jointing of the masonry (Fig. 96) exhibits, in each, a curious and ingenious method of supporting the lintel. The opening next above the portal in the south tower bay is of two orders, with pointed arches, while the corresponding place in the north bay is occupied by a smaller window having a round arch. Above each of these openings the wall is embellished by an obtusely pointed blind arcade of two arches on slender shafts, and over these again, a small circular opening in each bay on the level of the circle of the central bay. One of these is now filled with a clock dial, and the other has tracery of a late pattern. The

buttresses of the front of Senlis, unlike those of the Abbaye-aux-Hommes, are carried up the towers to the cornices of the first story above the roof of the nave. In each face of this story coupled pointed arched openings fill the entire space between the buttresses of each tower. The north tower appears not to have been completed above this level; but the tower on the south side is surmounted by a spire of early thirteenth-century design which is of unrivalled beauty.

It will be observed, as we proceed, that, unlike the main body of the building, the Gothic façade is largely an ornamental modification and enrichment of the Romanesque façade, rather than a radical structural transformation. The façade with its towers is, for the most part, merely a storied edifice in which, as before remarked, the structural principles that are peculiar to Gothic are not extensively called into requisition. Nevertheless, by the enlargement of the openings, the slenderness of the supports and dividing members, the general emphasis of the skeleton, and the upward impulse of its main lines, it ultimately attained a distinctive expression in harmony with that of the rest of the fabric.

A great advance in the development of the Gothic façade was made in the Cathedral of Paris (Plate IV). This vast and superb design is not only the most elaborate that had been produced up to its time, but, in point of architectural grandeur, it has hardly ever been equalled. The general scheme is still the same as that of the Abbaye-aux-Hommes, but the component elements are treated in such a way as to manifest the Gothic spirit in every part. The larger divisions are grandly proportioned and beautifully subdivided, and the Romanesque characteristics have completely disappeared from the apertures, the arcades, and even from the moulding profiles. Three majestic portals on the ground story; a magnificent arcade, sheltering twenty-eight colossal statues, and reaching across the entire front, over them; a vast wheel, with open tracery, in the central upper compartment, with twin pointed openings and a small circle, embraced by a great pointed arch, in each lateral bay; an elegant, though gigantic, open arcade carrying the main cornice, together with the towers above, each pierced with coupled pointed openings,—make up a most impressive architectural composition. This noble creation of the early

thirteenth century has suffered much from the vandalism of modern times. Many of its details have been destroyed and replaced by new ones; but its leading features are still essentially unchanged.

The still richer façade of Amiens (Plate V) has been much injured by remodelling in its upper parts. But the lower portions retain their primitive forms. While the general scheme of this design is substantially like that of Paris, it exhibits a different treatment of details, and some novel features are introduced. The most important of these last are the porches, which are obtained by increasing the salience of the buttresses on the ground-story level, the outermost archivolts of the portals being brought forward so as to be flush with their outer faces, and gabled roofs being erected over them.<sup>1</sup> Many varieties of purely ornamental gables, often of exaggerated development, arose in later cathedral fronts; but here in Amiens they are simple, appropriate, and monumental. Other new features are the pinnacles which crown the deep offsets of the buttresses, and these buttresses are now further enriched with superimposed arcadings, panellings, statues, and sculptured reliefs. Between the great portals and the arcade of statues an elaborate open gallery is interposed, and the great wheel of the central bay is flanked by coupled pointed openings in the tower bays. This wheel has lost its original tracery, and the existing tracery, of Flamboyant design, does not harmonize with the nobler forms of the earlier composition. The top stories of the towers have lost most of their primitive features by Flamboyant alterations, and the arcade which now connects them is wholly Flamboyant. The façade of Amiens is thus sadly disfigured, so that its original aspect as a whole cannot be fully understood. Yet enough remains to show that this marvellous west front must have marked the culmination of Gothic art in its purest condition.

In the stupendous west end of Bourges we have porches of the same general character as those of Amiens. In fact, they

<sup>1</sup> These gables, thus introduced as protecting roofs over the arches, were seen to have an architectural value, and were soon brought into extensive use for ornamental effect where they had no structural meaning—as in the interior arcades of the triforium of the choir of this same cathedral. This purely ornamental use of the gable surmounting the arch does not, I believe, often occur before about the middle of the thirteenth century.

are, perhaps, even finer in point of monumental simplicity joined with elegance of form. The elaborate cusplings of the archivolts and crocketing of the gables of the porches of Amiens produce a slightly florid effect. But at Bourges these ornaments are altogether omitted from the central porch, and only crockets of very moderate development are used in the lateral ones. Bourges has a five-aisled interior, and the internal divisions are marked on the outside by buttresses of unusual prominence. There are thus five porches here, instead of only three, as at Amiens — where there are only three aisles. It may be remarked here that the Cathedral of Paris, also, has five aisles; but this is not expressed in its façade.

It is hard to speak critically of so majestic a structure as the west front of the Cathedral of Reims. The period of its construction was, however, one when the vitality and spontaneity of the Gothic movement were in great measure spent; and the signs of waning life are not wanting in this monument. It has merits, however, which almost entitle it to rank among the first of Gothic façades. In the magnitude of its openings, the attenuation of their dividing members, and the general emphasis of its upright lines, it has a more pronounced Gothic expression than any other monument of the thirteenth century, and yet its defects are conspicuous. Among the most marked of these is the projection of the jambs of the great portals beyond the faces of the buttresses, so that the adjoining splays meet in narrow edges. The buttress is thus lost to view in the ground story, where it ought to be a prominent feature. An approach to the same treatment occurs at Bourges, where the outer faces of the buttresses are somewhat narrowed, though not entirely covered, by the splays. A still further departure from the principles of the purest Gothic is seen in the treatment of the great ground-story gables. These gables do not follow the lines of the roofs of the portals to which they belong, but rise far above them as purely ornamental features, and thus violate the logic of the Gothic system in its integrity. The pinnacles over the offsets of the buttresses are of greatly magnified dimensions, and are raised on shafted canopies sheltering colossal statues. These are beautiful features in themselves, but the florid aspect of the whole design to which they largely contribute is somewhat excessive. The great western window wheel is set beneath

a pointed arch which is one with the westernmost transverse rib of the nave vaulting. The effect of this is not altogether happy. In earlier monuments, in Paris and Amiens for example, the westernmost transverse rib is made semicircular so as to form the upper half of the circumference of the opening. A better treatment, where the westernmost transverse rib has the pointed form, is shown at Bourges. In this case the circular wheel is omitted altogether, and a vast pointed arched opening with mullions takes its place. The wheel, however, is a magnificent feature, and much grander in effect than the gigantic pointed opening. Its great circle contrasts most effectively with the lines of the general framework of the façade; and the elaborate geometric patterns of its tracery are among the most charming features of Gothic art. Viewed as a whole the west front of Reims has a remarkably soaring aspect. This is secured not only by great height in proportion to width, and by a multiplication of slender upright members, but also by a general breaking up of the horizontal courses, so that no continuous level lines extend across the entire front; and the effect is heightened by an acute gable over the top arcade of the central bay, as well as by the addition of immensely tall open canopies, on slender supports, in place of solid buttresses, at the angles of the upper stories of the towers.

The west fronts of Senlis, Paris, Amiens, and Reims sufficiently illustrate the development and the characteristics of the French Gothic western façade. Its typical form, as exhibited in the Cathedral of Amiens, is a marvel of architectural grandeur and beauty. With the given conditions it is hard to see how a more successful result could have been reached. The arch, the shaft, the buttress, and the string are employed with the finest artistic judgment. The main masses are disposed and proportioned with subtle feeling, and the myriads of ornamental details are distributed with a sense of largeness and breadth of total effect, no less than of delicacy in minute elaboration. The men who designed and executed these façades were great artists; and their work bespeaks an æsthetic culture comparable with that manifest in the finest art of Greece. If this is still largely unrecognized, it is due, in great measure, to the fact that our modern ideas have been formed under the influence of æsthetic guides who, in over-zealous and unenlightened

regard for classic, and Neo-classic, art, have failed to appreciate the real character of the arts of the Middle Ages.

I have said that in the western façade there was little occasion for peculiar structural developments. It ought not, however, to be supposed that such developments were altogether wanting in this part of the Gothic edifice. M. Viollet-le-Duc has shown,<sup>1</sup> for instance, that in the great buttresses, like those of the Cathedral of Paris, the tendency to settlement is greater at the inner part, which is more heavily weighted, than the outer face. This inequality of settlement would be apt to cause more or less rupture in the mass were not means taken to relieve the inner side, and to distribute the weight equally. In the colossal buttresses of Paris a series of props of cut stone are shown to be embedded in the rough rubble masonry of which the inner masses are mainly made up. These conduct the weight at intervals from the inner portions to the outer. To secure the outer faces of the buttresses against yielding to the outward thrusts of these props, bond courses of cut stone are inserted and firmly held together by cramps of iron. The buttress thus built becomes an organic structure partaking of those principles which reign throughout the rest of the building.

Of external features none is more striking, and, after the flying buttress, none shows more of the Gothic spirit, than the stone spire with which, in the original design, if not in the completed work, the tower was crowned. The spire is, moreover, a feature which, perhaps, beyond any other marks the communal spirit and influence. It formed the governing feature in and general view of the mediæval town; and was a sign of municipal power and prosperity. It was natural, therefore, that the spire should call forth the special enthusiasm and effort of the lay builders.

Before the twelfth century nothing like a true spire had been built. In France during the eleventh century the form of the tower roof, when of stone, was that of a low square pyramid, like those still extant on the towers which flank the apse of the Abbey Church of Morienvall (Fig. 97), and date from

<sup>1</sup> *S.v. Construction*, p. 158 *et seq.*

about the middle of the eleventh century. In Normandy more acutely pointed pyramids occur, dating from an early period; but they are still on a square base, as at St. Contest (Calvados), where a small round-arched dormer, surmounted by a gable, breaks each side near the base (Fig. 98). In the Ile-de-France, however, the true spire, which is octagonal in form, surmounts the square tower early in the twelfth century, as in the small churches of St. Vaast de Longmont, Chamant (near Senlis), St. Leu d'Esserent, and others. Of these Chamant (Fig. 99), if it be in reality as early as it appears, is especially interesting because it exhibits features which were afterwards magnificently amplified in the unique spire of the Cathedral of Senlis. These features are: acutely gabled dormers with pierced tympanums, one on each of the four faces of the octagon that are even with the tower walls, and small openings above in each of the eight faces. Few, if any, spires of earlier date than these had been constructed; and from such simple types the progress was surprisingly rapid. Innovations, which were generally improvements, quickly followed each other until the typical Gothic spire was produced. There were difficulties, too, of no small magnitude to be overcome. To manage the transition from the square plan of the tower to the octagonal plan of the spire, so as to secure both stability and beauty, was not an easy task at a time when there were no precedents to guide the constructors. Thus these early spires, when regarded as experiments in untried forms of design and construction, may well call forth our admiration; though when compared with subsequent achievements, we recognize the points in which they fail.

FIG. 97. — Morienvall.



The adjustment in Chamant of the octagon to the square is but partially successful as an architectural design. The transition is too abrupt. The upper story of the tower is not well prepared to carry a spire; there is a lack of organic connection between the two parts.

Great improvements were made in the tower and spire of the Abbey Church of the Trinity at Vendôme (Loir-et-Cher,

The angle buttresses are here carried up to the cornice of the belfry story with which the square tower terminates, and between this and the spire a tall vertical octagon story is interposed. Open circular turrets with pointed conical roofs cover the angles of the square belfry, and a pointed opening of two shafted orders surmounted with a gable adorns each cardinal face of the vertical octagon. This octagon is crowned with a bracketed cornice from which the spire rises without any subordinate structural or ornamental features. The tall polygonal drum and its engaged turrets form an elegant and aspiring group, but the junction of the spire with the octagon is not as well managed as it might be. The unbroken level line of this junction is not in harmony

FIG. 98. — St. Contest.

with the soaring spirit that was seeking expression. Still greater improvements were, however, very soon made, and the typical Gothic spire was brought into existence at one further stride, in the Cathedral of Chartres. The south tower and spire of this monument (Fig. 100) were constructed between 1140 and 1160. In this case the polygonal drum has a square turret, with a shafted opening in front and a steep pyramidal roof, set over each of the tower angles against each oblique face of the drum. These turrets, rising directly over the buttresses of the substructure, continue their vertical lines and thus happily unite the drum with the tower. A pointed arched opening





in each cardinal face of the drum is surmounted by a high and steep gable, which rises through the drum cornice and abuts against the base of the spire. The apexes of the pyramids of the angle turrets likewise rise above the cornice of the drum, and thus the level line, which is so marked in Vendôme, is broken up, and the composition as a whole has an organic and aspiring expression. As in the spire of Vendôme, coursed three-quarter rounds adorn the angles, and a similar moulding is carried up the middle of each face. The spire of Chartres has a monumental nobility and purity of style that are hardly equalled in any other Gothic spire of the twelfth century.

The small Church of Vernouillet (Seine-et-Oise) has over the crossing a spire of great beauty, dating apparently from the latter part of the twelfth century. In this composition the octagonal drum is omitted,<sup>1</sup> but the development of the pinnacles and gabled dormers, and the manner of their grouping in relation to the main body of the spire, indicate advanced powers of design. Elegant open shafted canopies of square plan here support the pinnacles of the tower angles, and are set even with the tower walls, while shafted dormers, with steep gables, rise against the cardinal faces of the spire. The lines are all well carried up — those of the tower buttresses being continued by the shafts of the pinnacles; while the inclined lines of the crowning members lead the eye in the direction of the spire itself, which rises through the subordinate group with admirable effect.

FIG. 99. — Chamant.

The spire of the Cathedral of Senlis (Plate VI), erected early

<sup>1</sup> Though the octagonal drum is omitted from the design of the exterior of the spire of Vernouillet, it nevertheless exists inside, as shown by Viollet-le-Duc, s.v. *Clocher*, p. 327.

in the thirteenth century, marks the culmination of pure Gothic art in this feature. In point of organic design it possesses all of the merits of the spires of Chartres and Vernouillet, while for grace of outline, soaring expression, and beauty of details it is unequalled by any other spire of the Middle Ages. In this case the octagonal drum is much taller than at Chartres, as are the proportions of all other parts of the structure. The pinnacles over the angle buttresses are here, as at Vernouillet, set even with the tower walls, and consist of three slender shafts which reach to about one-half the height of the drum, and carry pointed arches surmounted by acute skeleton pyramids richly crocketed. The axes of these pyramids are not vertical, but are inclined inwards against the oblique faces of the octagon. Their outlines thus lead the eye up to the inclined lines of the spire, and their apexes rise above the drum cornice high enough to break up its horizontal line. A tall, pointed, arched opening pierces each cardinal face of the drum, and a dormer of slender proportions, with an acute pierced gable and rich, though not over-elaborate, design, is set against each face of the spire, which is pierced on each side, above the dormers, with two narrow rectangular openings and a circle between them. Slender engaged shafts rise against the angles of the drum, and crockets adorn the angles of the spire.

FIG. 100. — Chartres.

In these spires the oblique walls of the octagon are sustained by squinches in the reentrant angles of the tower; and these, with the loads they carry, help to consolidate the fabric,

while the thrusts of the spire are further reduced to a minimum by thinness of masonry, and by the weight of the abutting dormers.

We may now briefly consider the general interior and exterior aspects of the Gothic edifice. Standing at the west end of the nave and looking eastward, the interior of a great cathedral presents a most impressive spectacle. The effect is, indeed, almost overwhelming. The vast vista with its stately piers and lofty vaults, the rhythmical order of the larger subdivisions, the multitudinous array of subordinate members ranged in sequent ranks, and losing themselves in the mysterious perspective of the choir—the view ending in the majestic apse seen dimly through the misty, incense-laden air, produce upon the receptive mind sensations that are awakened only by the noblest works of the creative imagination.

In any general view of the exterior the structural system is everywhere plainly expressed. We see at a glance that the building is not composed of walls and timber roofs, but that it consists of vaulting sustained by piers and buttresses. So marked is the expression of this peculiar mode of construction that M. Renan has likened the Gothic edifice to an animal with its *charpente osseuse autour de lui*.<sup>1</sup> In the frank exhibition of each functional member, and the artistic skill with which all are shaped and adjusted with regard to their effect in the mighty whole, reside largely the peculiar impressiveness of the Gothic cathedral.

The general proportions of the exterior are sometimes thought to be unsatisfactory. But the fact is overlooked that hardly any of these mediæval churches were completed according to the original design, and that not one of them has come down to us without having undergone considerable, and more or less damaging, alterations. Those which were most nearly completed at one epoch, and have suffered least from alterations, are remarkable for grandeur and for justness and harmony of proportions. Among these two may here be taken as illustrations—one an early structure, and the other a later one. The first

<sup>1</sup> Le Clerc and Renan, "Discours sur l'État des Beaux-Arts," in the *Hist. Littéraire de la France au Quatorzième Siècle*, Paris, 1865, p. 230.

is the Abbey Church of St. Leu d'Esserent (Plate VII), and the second the Cathedral of Reims (Plate VIII). Both exhibit parts belonging to different periods of construction; but these parts are all of admirable character, and they group together very harmoniously. In St. Leu the apse, the apsidal chapels, and the eastern towers, together with the first adjoining bay of the nave, date from about 1170;<sup>1</sup> while the main body of the nave appears to have been constructed a few years later, and the western tower, with its spire, is a remnant of an earlier edifice. With exception of the western tower, to which the reconstructed nave is ill adjusted, the total composition as it now stands is conspicuously fine in outline and just in its proportions. It is, in fact, one of the best and completest surviving monuments of the Gothic art of the twelfth century.

In the general exterior view Reims presents a striking consistency and harmony of parts, and as a whole it is equalled by few other French cathedrals, notwithstanding that it comprises parts that were wrought at successive periods extending from 1212 to the fourteenth century. The earlier and later portions are, however, so inconsiderable in extent as to have little effect in the general side view. The main body of this vast structure was built during the thirteenth century; the greater part of what is visible in the illustration being subsequent in date to the year 1240—the period when the work was resumed after a delay that followed the construction of the lower parts of the east end, where the monument was begun.

A noticeable feature of this exterior is the elaborate and gigantic parapet with which its cornices are crowned. This feature appears to have been developed early in the thirteenth century. In the Gothic of the twelfth century it hardly ever appears. The naves of Noyon,<sup>2</sup> Laon, St. Leu d'Esserent, and other kindred monuments are crowned with simple cornices only. In Paris, Soissons, and Chartres simple parapets occur, and in Amiens and Beauvais they are more developed. But this parapet of Reims surpasses in magnitude and richness that of any other Gothic building. It is, in fact, over-developed, and like many

<sup>1</sup> The work is so closely similar in character to that of the eastern portions of Senlis as to warrant the belief that it is nearly contemporaneous; while the style of the superb capitals of the interior seems to show that they must have been wrought subsequently to those of the choir of Paris, which date from 1163.

<sup>2</sup> The existing parapet of Noyon is an addition of modern times.

SAINT-LEU D'ESSEMENT  
Second half of twelfth Century

U. N.

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other features of this cathedral, manifests a spirit of lavish ornamental display which was one of the influences that led to the decline of Gothic art.<sup>1</sup>

These two monuments, St. Leu and Reims, afford an interesting comparison, the one showing the unadorned condition of the external features which is characteristic of the time when structural exigencies were first being successfully met, and the other showing the richness of the full Gothic development when the edifice stands forth clothed in a vast wealth of appropriate enrichments. Each condition has its own proper charm; but it may be questioned whether the monumental simplicity of the earlier building has not some superior merits: Reims, though magnificent, is somewhat redundant. The Gothic exterior, in its utmost purity, would partake more of the character of St. Leu. The nave of Amiens, in its original integrity, would illustrate more justly this condition.

We have now examined enough of these structural forms and adjustments to enable us to understand the Gothic system and the animating principles which controlled the French builders of the twelfth and thirteenth centuries. Gothic art was a result of an unparalleled impulse which had its source in the social improvements of the eleventh century, as well as in the peculiar French genius. These improvements gave scope to inventive spirit, and supplied material resources. Architectural activity was incessant. The number of churches erected in the Ile-de-France during the first half of the twelfth century is astonishing. In no other part of the world was there anything like it.<sup>2</sup> And this activity continued, and gathered force, for at least three-quarters of a century after 1150.

<sup>1</sup> In connection with the parapet the gargoyle may be mentioned as a feature that makes its appearance in the thirteenth century. Both parapet and gargoyle arose in connection with the canal for the accumulation and discharge of rain-water. Formerly, as in St. Leu d'Esserent, the tiling of the roof overhung the cornice and discharged water all along its length. But by means of the canal with its gargoyles the water was discharged at intervals and thrown far out beyond the sides of the building. The canal became also a convenient passageway, by means of which various parts of the exterior could be easily reached. The passageway called for the protecting parapet. Cf. Viollet-le-Duc, s.v. *Balustrade*.

<sup>2</sup> A glance at the *Carte des Monuments Historiques de France, indiquant les Écoles d'Art du Territoire Français pendant la première Moitié du XII<sup>e</sup> Siècle*, published by the French government, shows this region thickly studded with churches; while in the neighbouring provinces they were more sparsely scattered.

The buildings which we have considered, though among the most important, are by no means the only ones in France which exhibit the growth and character of Gothic art. There are many others of the same character, and few, if any, of a different kind. The Gothic movement was general throughout the region where it arose. It was a remarkably spontaneous and national movement—all of the elements of the new style being creative developments out of older principles and forms. There was no mere imitation, there was nothing of the kind elsewhere to imitate. After the beginning of the twelfth century every traditional architectural member that could be utilized was subjected to a process of organic recreation, and adjusted to its place in the Gothic system.

As we have seen, structural and artistic principles find simultaneous expressions in every step of the progress of this art. Mechanical invention and æsthetic feeling were never separated in the minds of the French builders. They were true artists, and wrought with a steady regard for beauty. I would again emphasize this, lest from our lengthened examination of its structural growth it should be, in any degree, inferred that Gothic architecture was such a growth merely. The Gothic monument, though wonderful as a structural organism, is even more wonderful as a work of art.

We have followed the development of French Gothic from its inception to its maturity. We have found its distinctive character first taking form in the apsidal vaults of Morienvall advanced in St. Germer and St. Denis, and further perfected in Noyon and Senlis. We have found every functional member complete in form and adjustment in the Cathedral of Paris; though much that is unessential to the new system still clings to it. We have next seen the lingering remains of Romanesque art gradually diminished, and the Gothic spirit more independently expressed, in the early portions of Reims, and in the remodelled portions of Paris; while, finally, in the nave of Amiens, we have beheld the transformation wholly accomplished, and the Gothic style standing forth in its perfected majesty and splendour.

In France, then, Gothic architecture was germinating by the beginning of the twelfth century, had accomplished its structural transition in the third quarter of the century, and had reached its fullest perfection by 1220.

REFIMS CATHEDRAL  
Nineteenth Century

W. H. O.

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## CHAPTER VI

### POINTED CONSTRUCTION IN ENGLAND

Few instances of organic vaulted architecture, including the employment of groin ribs and the structural use of the pointed arch, occur in England prior to the rebuilding of Canterbury Cathedral by a French architect—which was begun in the year 1175. One instance of pointed vaulting on ribs occurs, however, in the aisles of Malmesbury Abbey, a building which is nearly contemporaneous with the Church of St. Denis in France. From this it has been maintained<sup>1</sup> that a transitional movement had arisen in England as early as in France, and that this building affords evidence of a native progressive spirit in architecture equal to that which was active on the Continent. But the character of the monument as compared with contemporaneous and preceding continental works does not bear out this view. For although Malmesbury has some important transitional features, in organic development it is very far behind contemporaneous continental works, and we now know that the Gothic movement arose in France long before this time—its early progress there being traceable, as we have found, in many extant monuments which antedate the Church of St. Denis. It will be seen (Fig. 101) that the Malmesbury vaults have a slightly domical form, and are furnished with transverse and groin ribs, but no longitudinal ribs. The pier arches and the transverse arches are pointed, while the groin arches are semi-circular. The profiling is primitive,—the transverse ribs being square in section, while the diagonals are three-quarter rounds. It is evident that the nave was originally designed for vaulting, since a group of three vaulting shafts is incorporated with each pier. These shafts seem clearly to belong to the original construction, as may be seen (Fig. 102) by their perfect adjustment with the imposts of the great arcade, from which they rise, and

<sup>1</sup> By J. H. Parker and others.

by their being banded by the original triforium string. But if vaulting to correspond with these shafts was ever carried out, it was afterwards destroyed. The existing vaults of the nave are of late English construction, and of a character that does not harmonize with the earlier parts of the building. The heavy Norman triforium has a feature that is uncommon in England, though it is constant in the French Gothic; namely, a wall within the arcade screening off the space over the aisle

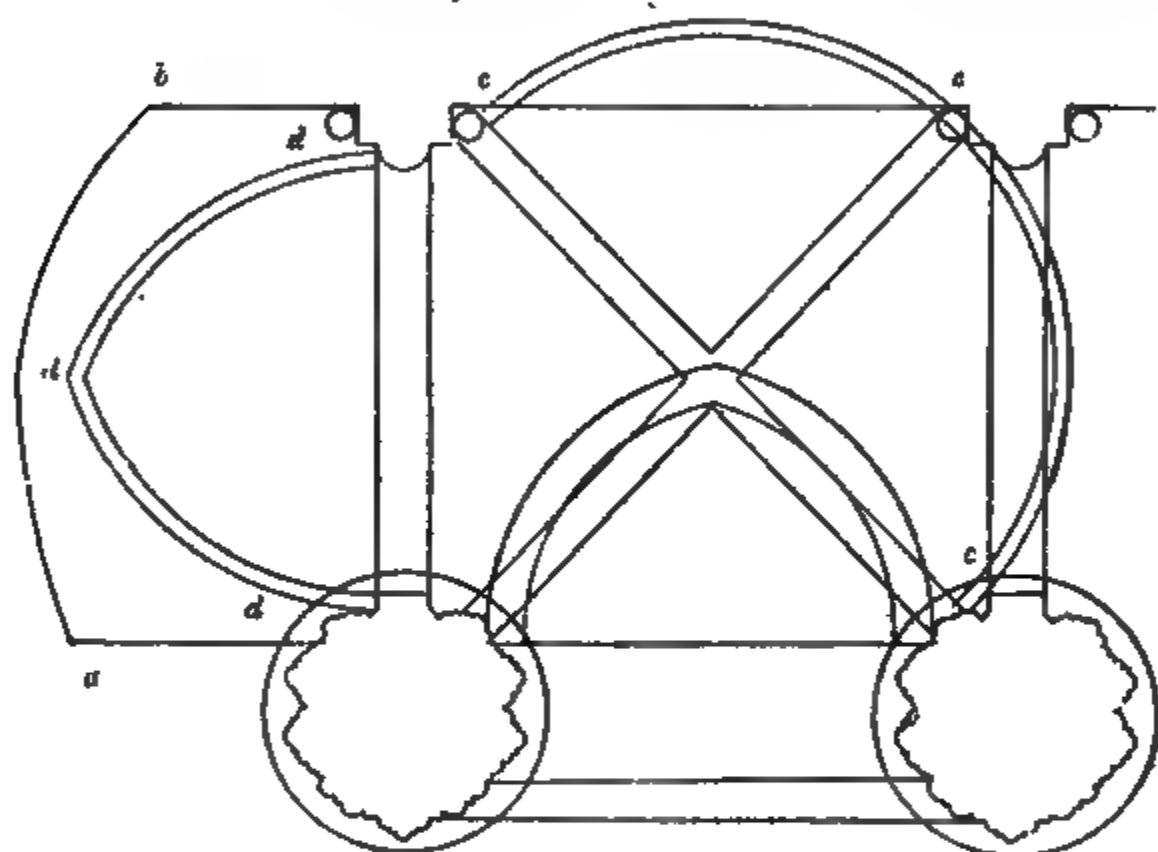


FIG. 101.—Vault of Aisle, Malmesbury Abbey.

vaulting. In the pointed architecture of England the triforium is usually open, exposing to view the timber roof of the aisle.<sup>1</sup>

With such approach to transitional Gothic character as it has, Malmesbury Abbey is, in England, an isolated work of its kind. No earlier buildings seem to have led up to it, and no further developments grew out of it. It is not, therefore, like St. Denis of France, a link in a continuous chain of structural progress. It is apparently a partial imitation by the Norman builders of the new mode of vaulting that was developing in France. The Norman elements remain largely unchanged—even in the interior system—which is not organically fashioned

<sup>1</sup> See p. 208.

throughout. Let us give its Anglo-Norman builders all the credit that is due for an early attempt to follow in the path that had been opened across the channel; but we cannot fail to see that they were not really imbued with the spirit, and governed by the principles, that were transforming the architecture of the Ile-de-France.

FIG. 102. — System of Malmesbury Abbey.

The buildings which immediately follow Malmesbury show, in the manner of their construction, less, rather than more, of transitional character. The early abbey churches erected soon after the middle of the twelfth century hardly depart in any essential manner from the older Norman modes of building. The pointed arch occurs, indeed, in most of them, but it is without structural necessity in vaulting, and without architectural



consequence in the general system. The vaulting that occurs in these churches is often of the most primitive kind. The aisles of Fountains Abbey, for instance (Fig. 103), which date from about 1150, are covered with a series of pointed barrel vaults carried on heavy transverse round arches—as in the nave of St. Philibert of Tournus (described on p. 41). These transverse arches (which spring from a lower level than the

FIG. 103. — Fountains Abbey.

great archivolts) rest on corbels let into the piers and the aisle wall respectively. The piers themselves are bulky round columns of masonry, each having two engaged shafts on the aisle side. These shafts have no connection with the vaulting, but merely support the corners of the great abaci—which are square on the aisle side, while they are polygonal on the side of the nave in conformity with the shape of the impost section. Figure 104, a plan of the abacus laid over a section of the pier, will explain the arrangement. The nave of Fountains was neither

vaulted nor intended for vaulting. Its massive walls, carried on pointed pier arches, are unbroken by structural members, and there is no approach to Gothic character in any part.

The aisles of Kirkstall Abbey, which belong to about the same epoch as Fountains, have groined vaults on pointed arches with transverse and diagonal ribs. The piers are composed of small round members grouped about a circular core, and are crowned each with an octagonal capital. These small members have no strict relationship either to the aisle vaulting, or to the great arch orders. As in Fountains, there are no responds against the aisle wall—the vaulting here being supported on corbels. No nave vaults are provided for, and the design above the pier arches is substantially the same as that of Fountains. It will be seen (Fig. 105) that the organic pier of Romanesque and Gothic art does not exist in Kirkstall any more than in Fountains. In both of these buildings it is merely a ground-story support, and has no organic composition whatever.

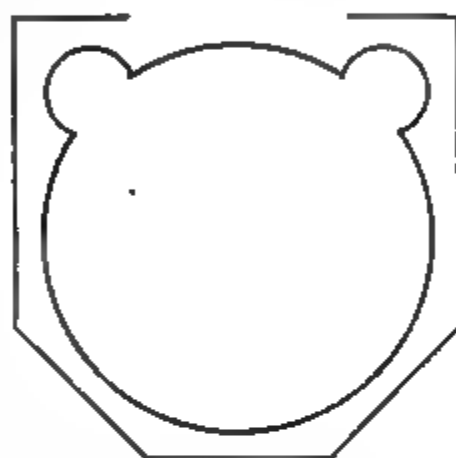


FIG. 104.

It may be remarked in passing that the masonry of vaulting in England, not only at this time, but also during the whole period of pointed design, is usually different from that of France; and is often, as here at Kirkstall, composed of broken flattish stones, of irregular sizes, wedged together as in primitive Norman vaulting—the surfaces of the vaults being finished with a coating of plaster. Light vault shells, of well-faced and finely jointed stones like those of the French Gothic, though often found in the larger English cathedrals of the thirteenth century, are rare before that time.

Many other instances of the use of the pointed arch, with and without vaulting, may be found in the Anglo-Norman architecture of about the middle of the twelfth century; but they are generally devoid of constructive significance. Thus far in England, though the cathedrals of Senlis and Noyon were now in process of building across the channel, nothing of a more advanced character occurs. But, on the contrary, such important works as the naves of Peterborough and Ely, and many

other large churches, were still constructed in the unmodified Norman style.

No important structural modification of an entire system appears to have been made in England till William of Sens began that rebuilding of the choir of Canterbury to which I have already referred. And even this building, though a very

beautiful one, is not so fully Gothic as the choir of the Cathedral of Paris, which had been begun more than a decade earlier. But the choir of Canterbury (Fig. 106) was the real beginning of what Gothic there is in the pointed architecture of England. From it, as the main source, is derived, in so far as structural elements are concerned, what is known as the early English style. This choir has five bays, and is vaulted with one quadripartite and two sexpartite compartments. These vaults are constructed on a full system of ribs, of which those of the transverse arches only are pointed. The longitudinal rib is much stilted, the surfaces are domical, and the resulting forms give the work a substantially transitional Gothic character. The larger ribs are carried on slender monolithic shafts, which rest on the capitals of the ground-story piers, which are, alternately, round and octagonal columns. The longitudinal ribs rest on small shafts rising from the clerestory ledge. Thus there are only three shafts in the

FIG. 105. — Kirkstall.

main pier groups, and only one in the intermediate pier. This arrangement, which rarely occurs in the Gothic of France, is found (as we have seen, p. 119) in the Cathedral of Sens — the architect's native town. We shall presently see that the single vaulting shaft, here used logically to support the single intermediate transverse rib, became frequent in the pointed

architecture of England, but that it is often made to carry all the ribs in quadripartite vaulting. The great pier arches are pointed and of two orders profiled like contemporaneous

FIG. 106. — Choir of Canterbury.

French archivolts, the triforium has both round and pointed arches of two orders (also with French profiles) on monolithic shafts, and the clerestory has a passageway in the thickness of

the wall which gives two planes of masonry—the inner one of which is pierced with an opening which occupies almost the entire width of the bay, and is spanned by the longitudinal vault rib; while the outer one has a smaller opening with a pointed arch. The thrusts of the vaulting are met by an arch against each pier across the triforium, and by a flying buttress over the aisle roof.<sup>1</sup>

Though the system of this choir is somewhat less advanced than those of the contemporaneous Gothic works in France, it is nevertheless a distinctly transitional structure, and one of great beauty. It is, however, wholly an importation from the Continent, and in no sense a native product.<sup>2</sup> Its novelty and beauty made a deep impression, and very naturally excited emulation. The lesson which it taught soon bore fruit in some of the important churches that arose in England during the last decades of the twelfth century. Among these were the more easterly portions of the same cathedral, the reconstructed portions of Chichester, and the choir and eastern transept of Lincoln.

After the completion by William of Sens of the choir and some portion of the more eastern parts of Canterbury, the master, having received injuries in a fall from the scaffolding, relinquished the work and returned to France. He was succeeded by another William, said to have been an Englishman. It is difficult to distinguish with precision the beginning of the work of the second William.<sup>3</sup> There is, however, not much of importance in the larger features of any part of the building that can be called his own design. He apparently did little more than to carry out the original scheme of William of Sens; for the work is still mainly French in character. The coupled columns of the ground story of the Trinity Chapel, or so-called Corona, at the eastern end of the church, are like those of the Cathedral of Sens, and the vaulting and vaulting system are substantially the same as before. The apse is thoroughly French in design, and its vaulting, in five cells, is perfectly Gothic in form.

<sup>1</sup> Cf. Professor R. Willis, *Architectural Hist. of Canterbury Cathedral*, London, 1848, p. 75.

<sup>2</sup> See the account of the rebuilding of this choir given in Willis's excellent work.

<sup>3</sup> Cf. Willis, *Op. cit.*, p. 91.

The Cathedral of Chichester, like that of Canterbury, was originally a Norman structure of the end of the eleventh century. In the year 1186 it was extensively damaged by fire and immediately thereafter repairs were begun which involved the entire rebuilding of the two easternmost bays. At the same time the whole nave was vaulted with oblong quadripartite vaults on ribs and pointed arches. All of the ribs are gathered on the single round abacus which covers a group of three capitals that crown the slender vaulting shafts. In the piers which divide the newly constructed eastern bays we already meet with some peculiarities of adjustment which frequently occur, as we shall see, in the subsequent pointed architecture of England, and which differ materially from those of the true Gothic. In these piers the vaulting shafts rest on corbels placed just above the great compound capitals of the ground-story arcades, and thus have no connection with the lower piers. The lower pier (Fig. 107) is composed of a central round column of coursed masonry, with four widely detached monolithic shafts which are adjusted to the arch orders of the ground story only.<sup>1</sup>

FIG. 107. — Chichester.

The great distance from the central column at which the lesser shafts are here placed gives the pier a character in marked contrast with that of the Gothic pier in which the grouping of members is compact and organic, as in the pier

<sup>1</sup> Sir Gilbert Scott, *Rise and Development of Mediæval Architecture*, vol. ii. p. 142, speaking of the multiplication of arch orders, says: "This gives us our clustered columns, which are, in fact, the mere decoration of the receding orders of the piers." It is true that clustered columns in England are usually nothing more than this; but in Gothic the grouping of members in the pier arises primarily from the exigencies of vaulting.

of Amiens (Plate II). For the work that it has to do this pier is well and beautifully designed. Its lightness and elegance of form are noteworthy, and though the load that it carries is very bulky, a solid pier of this magnitude would not be any more secure. But in a strictly Gothic structure the load would be, in proportion, less bulky, and the pier would be correspondingly compact. The compound capital which crowns this pier is, in main idea, the same as that of the western pier of the nave of the Cathedral of Paris, described on p. 126, with the important difference arising from the detachment of the secondary shafts. An instance of a compound pier with parts thus widely separated from the central column, and none of them directly employed in the support of the high vaulting, never would occur in the Gothic of France.

The great arcade is the original round-arched Norman one more or less remodelled. In the two eastern bays the archivolts have been reconstructed in three orders. The triforium here consists of a round arch in each bay, encompassing a sub-order of two pointed arches on clustered shafts, and the clerestory, like that of Canterbury, has a passageway in the thickness of the wall with a single pointed opening in the outer plane of masonry, while the inner one has a larger pointed arch flanked by two smaller ones carried on shafts—as in the Trinity Chapel of Canterbury. Externally there is a shallow buttress against the clerestory wall, which is reinforced by a flying buttress of almost purely French type, perhaps the earliest instance of a well-developed flying buttress in England.

The characteristics of this building are thus mixed. It is not, like Canterbury, a French design, but is apparently the work of Anglo-Norman architects who adopted certain features of the growing French style, modifying them according to their own tastes, but failing fully to appreciate their functional meaning. Yet notwithstanding its want of structurally consistent Gothic character, there is a great deal of beauty in this interesting monument.

Almost immediately after Chichester (about 1190) were begun the deservedly famous choir and east transept of Lincoln Cathedral. In this beautiful building a curious mingling of French<sup>1</sup>

<sup>1</sup> Some English writers have affirmed that the choir of Lincoln is native English work showing no trace of foreign influence. "St. Hugh's choir of Lincoln Cathedral

and Anglo-Norman characteristics is manifest. It is plainly an Anglo-Norman<sup>1</sup> modification of that portion of Canterbury which was designed by William of Sens, with some French details worked in. A comparison of the two monuments seems clearly to show this, and all of the artistic circumstances and conditions of the country at this time were such as to make it natural that it should be so. Bishop Hugh, under whose episcopate the work was executed, was a Frenchman by birth and early training; and his architect, Geoffrey de Noyers, though possibly, as English writers affirm, born on English soil, must certainly, from the name, have been of French, or Norman, extraction. However this may be, the plan of the building, especially that of the original east end, is distinctly continental. In general, the French influence governs the larger structural system, while the Anglo-Norman taste is mainly apparent in the ornamental details. Structurally there is no other building in England which has so much Gothic character except Westminster Abbey, in which the French influence was equally direct and strong.

The original eastern termination of this choir was destroyed in the thirteenth century to make room for the existing Presbytery. It was apsidal in form, with an apsidal aisle and three apsidal chapels.<sup>2</sup> Each arm of the transept had two chapels on its eastern side, three of which remain unaltered, and the fourth, the north chapel of the north arm, has been recently restored to its original form after having been altered to an oblong rectangular shape (Fig. 108). Westward of this tran-

is the earliest building of the Gothic style free from any admixture of the Romanesque that has hitherto been found in Europe or in the world," says Mr. Parker, *Introduction to the Study of Gothic Architecture*, p. 102. Such a view is not worthy of serious consideration in view of the known facts concerning the state of England, and of native English art, in the twelfth century.

<sup>1</sup> I say Anglo-Norman, rather than English. For whatever part native Englishmen may, at this time, have taken in architectural works, there can be little doubt that all such works, when not, like the choir of Canterbury, wholly conducted by Frenchmen, were mainly directed by men of Norman descent imbued with the spirit of Norman art. The architecture itself bears witness of this. Native English workmen were doubtless employed among others; but they could hardly, at this time, have taken a leading part in artistic production.

<sup>2</sup> The plan of this apse was recovered during the last century when the pavement of the Presbytery was taken up for repairs. A partial excavation made in December, 1886, in the south aisle of the Presbytery again laid bare a portion of it.



sept the choir is prolonged to the extent of four bays, and is terminated by a second transept, a construction which, with the exception of a portion of the eastern side, is a work of the first quarter of the thirteenth century. The main characteristics of this plan are French, and conform very closely with those of the original apse of the Church of St. Martin of Tours, which was laid out in the eleventh century.<sup>1</sup> That the plan of the east end of Lincoln was not of native English origin seems to be further shown by the peculiarity of the oblique sides which connect the apse with the transept. The same peculiarity

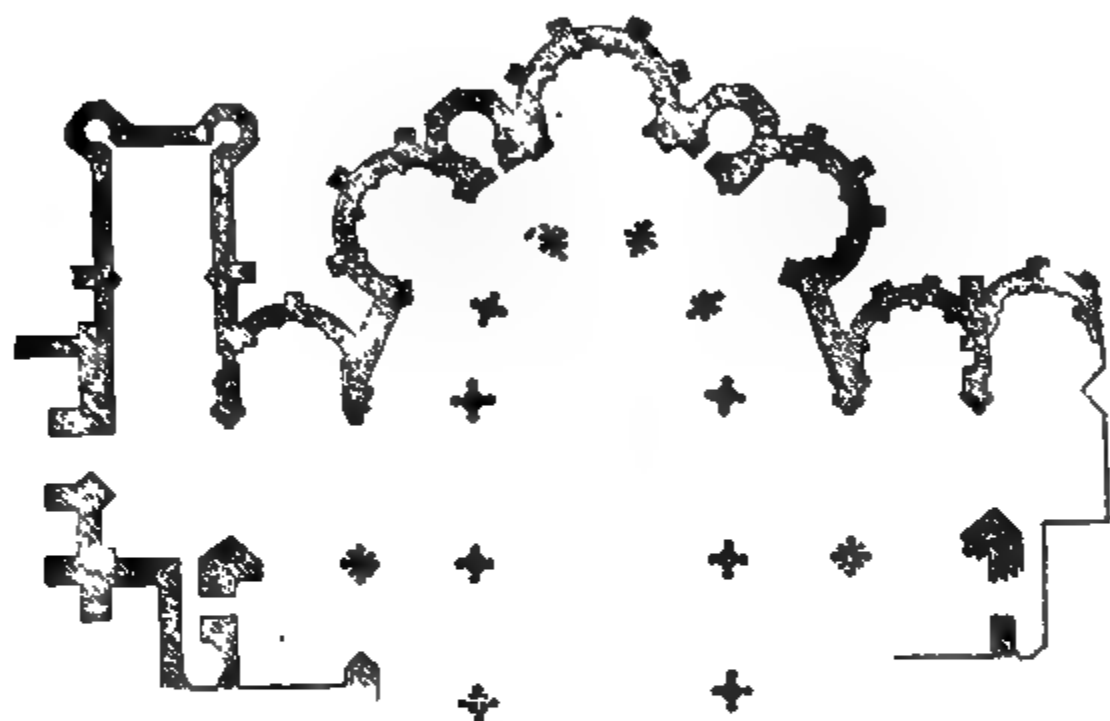


FIG. 108. — Plan of Apse, Lincoln.

occurs in the French east end of Canterbury in the portion which is embraced by the towers of St. Anselm and St. Andrew; and it looks as if this feature in Lincoln had been derived from this source.

Lincoln Cathedral is vaulted throughout. This is often not the case in important mediæval churches in England, and the fact is itself an evidence that no original Gothic movement had place in this country; for it is in vaulting, as we have seen, that the Gothic developments primarily arise. The vaulting of Bishop Hugh's choir has peculiarities which are difficult to describe in words, but the diagram (Fig. 109) shows the plan of one compartment, and the perspective elevation (Fig. 110) of the

<sup>1</sup> This plan was discovered in the course of excavations made in the year 1860, and an illustration of it is given in the *Bulletin Monumental*, vol. 40, p. 147.

clerestory shows the general form of the vaulting conoid. It will be noticed in the plan that the axes of the lateral cells are set obliquely, so that these cells do not meet each other in a point at the crown of the vault; but that they intersect the longitudinal ridge at different points, separated from each other by a distance equal to about one-third of the width of the compartment. This produces two smaller cells which together form an elongated diamond-shaped compartment set diagonally, and four other narrow triangular divisions. Such a form of vault is without meaning from a structural point of view, and is equally without value on any æsthetic principle. It seems to show plainly that the builders of Lincoln were not, as has been supposed, devel-

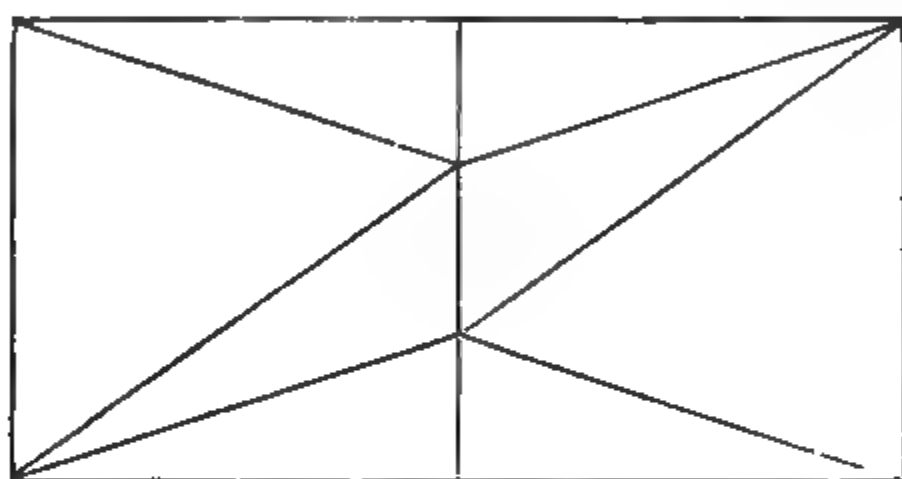


FIG. 109.

oping an original structural system. For builders working in a spirit of structural invention would hardly go so far out of the path of constructive necessity in search of mere singularity of design. Gothic vaulting had, as we now know, been substantially perfected in France long before the choir of Lincoln was begun, and the men who contrived this work were certainly acquainted with French models. In principle these vaults do not differ materially from plain quadripartite vaults with a Gothic rib system. In addition to the ribs here which have real functional use, others are inserted which are structurally superfluous. The first of these is a longitudinal ridge rib, — apparently the first instance of the introduction of this useless member, which, however, subsequently became a characteristic feature of vaulting in England, — while the second is the second rib in the pair which are substituted for the usual single diagonal. The longitudinal rib is imperfectly developed, and consists of a mere

moulding against the clerestory wall. This longitudinal rib springs from the same level as the transverse and diagonal ribs, and hence the vaulting conoid does not narrow inward in the manner that gives an effective concentration of the vault thrusts against the pier, as in true Gothic. On the contrary, the vault

here widens out against the clerestory wall in a way that seems to have been purposely sought, since the longitudinal arch has a slightly cusped shape, which increases the width of the conoid.<sup>1</sup>

The upright supports of this vaulting consist of a single vaulting shaft against each pier, upon whose capital all the vault ribs are gathered. This vaulting shaft started originally from the pavement, and was banded at half the height of the ground-story pier, at the impost of the great arcade, and also at the triforium ledge.<sup>2</sup> The lower piers vary in their details, but are substantially alike in general composition. They each consist (section, Fig. 111) of

FIG. 110. — Choir of Lincoln.

a central octagonal column, of coursed masonry, with four

<sup>1</sup> It ought to be said that the vaulting of the east transept is purer, and more Gothic, than that of the choir. The useless ridge rib does not occur here, nor any other superfluous ribs. This suggests the possibility that the existing vaults of the choir may possibly be of a later epoch than the rest of the system. It can hardly, however, be much later, since the character of the work, including the profiling, differs little from that of the parts which certainly belong to the original construction. Mr. Parker, *Introduction to Gothic Architecture*, p. 102, states that the choir of Lincoln had originally "wooden roofs and flat ceilings." This seems very unlikely; it is a conjecture unsupported by evidence, and it is contradicted by the character of the entire system.

<sup>2</sup> At present these vaulting shafts do not rise from the pavement, but are carried on ill-designed corbels inserted in the wall above the imposts of the great arcade. This damaging alteration was made in the fourteenth century in order to gain space for the existing stalls.

of its sides channelled. Against each of these channelled sides is set a slender monolithic shaft. One of these rises to carry the high vaulting, and the others carry respectively the aisle vaulting and the sub-orders of the great archivolts. Unlike the pier of Chichester, this pier of the choir of Lincoln has a functional relationship with the vaulting similar to that of the westernmost pier of the Cathedral of Paris, which it resembles in its structural composition, though in proportions and ornamental character it is very different.

The whole system is sufficiently shown in the section (Fig. 112). The pier as a whole is composed much like a French Gothic pier, having a buttress (*a*, Fig. 112) incorporated with it from the level of the triforium. This buttress is reinforced by an arch (*b*) thrown across the triforium, and a flying buttress (*c*) springing over the aisle roof. The united pressures

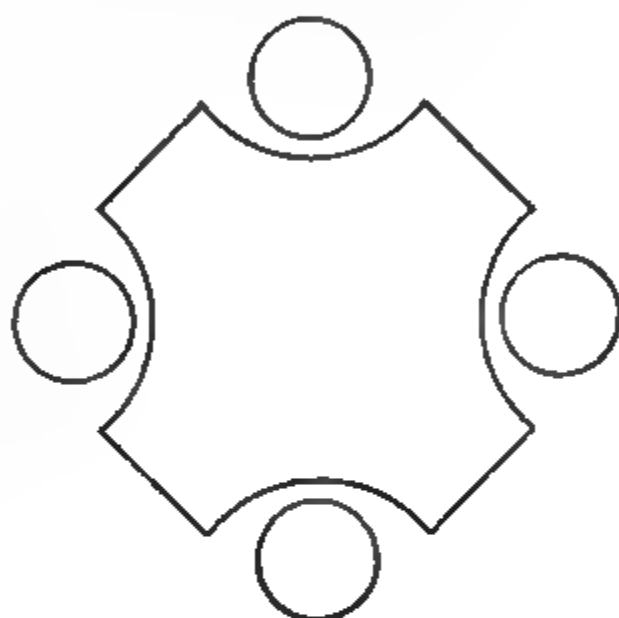


FIG. 112.

of the central vault and the aisle vault are taken by the great outer buttress (*d*) set against the respond pier of the aisle. The total scheme has a good deal of Gothic character mingled with features (the vaulting conoid, the superfluous ribs, etc.) that are not of true Gothic form. Apart from the points in which it fails to be Gothic, the structural elements of this work are plainly the result of French influence, while the ornamental details, which shall be considered in a future chapter, are mainly of Anglo-Norman character.

At the transept crossing the piers show most unmistakably the influence of the work of William of Sens at Canterbury. These piers are, in fact, structurally identical in the two buildings, except that the Lincoln piers on the east side contain two shafts each (*a* in A, Fig. 113) that have no functional office. With this exception they consist in each building of a massive central column surrounded by detached monolithic shafts — each one of which sustains a rib of the vaulting. These shafts

are of two superimposed groups, the first group having their capitals at the level of the springing of the ground-story arches,

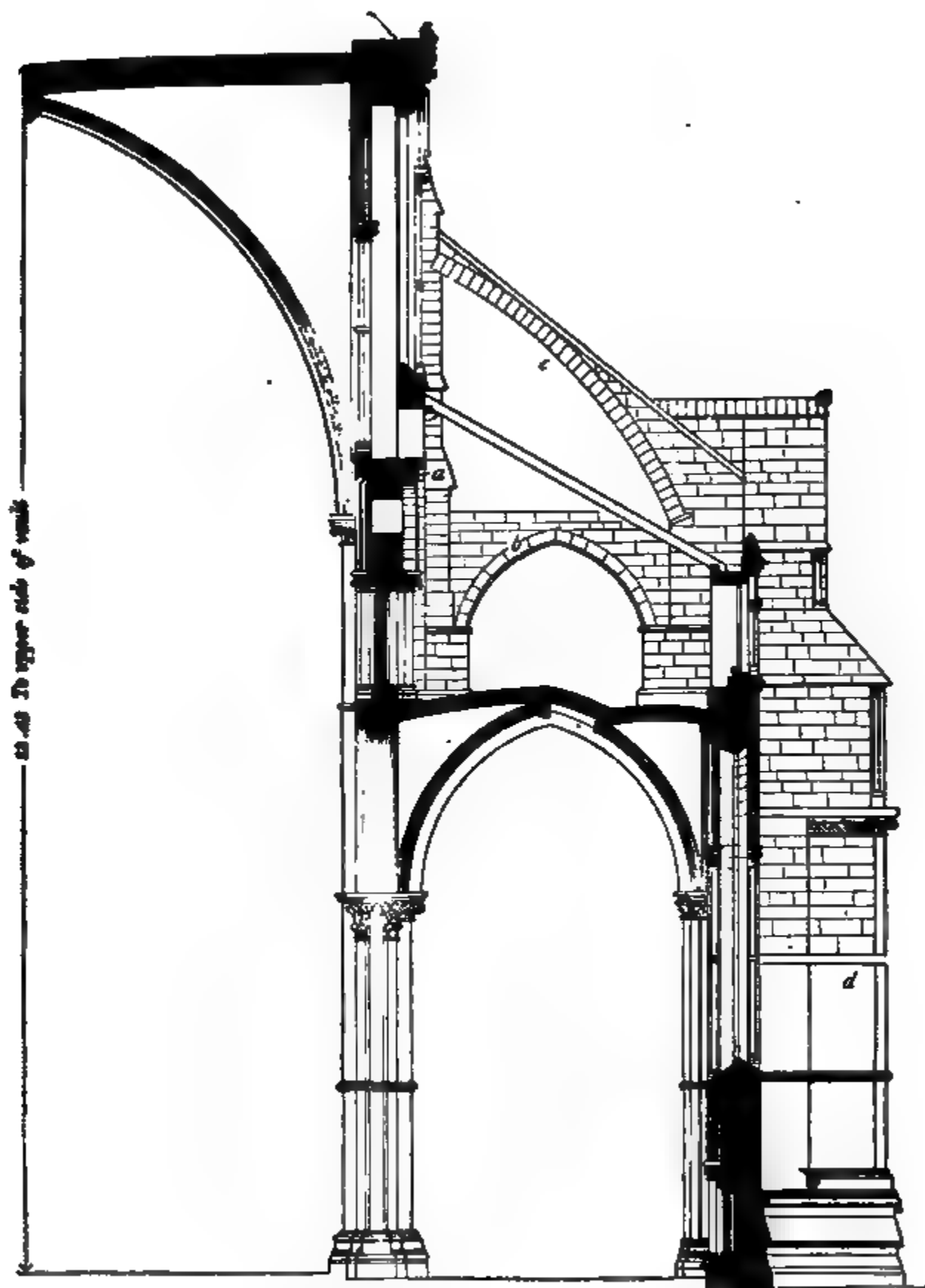


FIG. 112. — Section of Choir of Lincoln.

and the second reaching to the springing of the high vaults. But while at Canterbury (B in the same figure) the bases and capitals are of the French type, — the capitals having square

abaci and Corinthianesque foliage, and the bases square plinths, — those of Lincoln are of the Anglo-Norman type, the capitals having round abaci and the bases round plinths. The useless

A

B

FIG. 113. — Lincoln and Canterbury.

shafts occur, however, in the Lincoln piers, only on the east side of the crossing; and these evidently do not belong to the original work of the time of Bishop Hugh. They are of a character which corresponds with the work of the Presbytery,

and are thus probably alterations made when the Presbytery was built. The piers on the west side, while designed on the same general scheme, are materially different. Only one of them (the one at the southwest corner) appears to be an entirely unaltered piece of the original work, and in this pier the useless secondary shafts do not occur.

The arches of the ground-story arcade are obtusely pointed, and of two elaborately moulded orders. The triforium openings consist of coupled pointed arches, each embracing a sub-order of two lesser pointed arches carried on clustered shafts. The triforium has no enclosing wall, but is open, exposing to view the timbers of the aisle roof, which, as I have before remarked, is common in the pointed architecture of England. The clerestory is of a peculiarly Anglo-Norman type (see above, Fig. 110), and is quite unlike the true Gothic clerestory. This type appears to have been first developed in the east end of Canterbury in the part that may be the work of the English William. It consists, as before remarked, of two planes of masonry with a passageway between them, and three openings in each plane, of which the central one is the larger. Thus grouped and varied in magnitude, the three openings pleasantly fill the space encompassed by the arch of the vault, and make a good architectural composition. But a clerestory of this type is not suitable for a Gothic building, because it retains the walls which are incompatible with the spirit and principles of the Gothic system. In this early clerestory of the choir of Lincoln a third opening of diminutive size is added on either side of the central one in the inner plane, making a group of five arches in all. This form of clerestory is apparently of Norman origin, and occurs in the Abbaye-aux-Dames at Caen (Fig. 121), and in many other later Norman buildings both in Normandy and in England.

The general effect of the choir of Lincoln was doubtless greatly damaged by the destruction of the original *chevet*. The much over-praised angel choir is not an appropriate termination for the early choir and east transept, and affords no adequate compensation for the loss of the apse of Geoffrey de Noyers.

Contemporaneous with Canterbury and Lincoln is the Church of St. Mary, New Shoreham. Its ground story dates from about

1175,<sup>1</sup> and its upper portions from 1190 to 1210. The nave has oblong quadripartite vaulting on a full set of ribs of French profile, and the transverse and longitudinal ribs are pointed. These ribs, however, all spring from the same level, and thus the vault surfaces are not narrowed against the piers. The system is not the same on both sides of the nave. On the north side the ground-story piers are heavy columns, alternately round and octagonal with capitals of corresponding form. The great archivolt is pointed and of three heavy orders, and the arcade, as a whole, bears a strong resemblance to that of Malmesbury. The vaulting shafts start from corbels at the triforium string, and hence the lower system has no organic relationship to the vaulting. The design of the south side is more organic. The ground-story pier here has a form which resembles a group of small shafts corresponding in number with the arch orders and crowned with capitals having square abaci and somewhat French forms. The vaulting shafts start from the pavement, which gives a more Gothic aspect to the system; but there are only three of them in each pier, and their grouped capitals, crowned with a single round abacus, carry the five ribs of the vaulting. The whole construction is ponderous, and the triforium and clerestory are heavily walled. The external system has clumsy flying buttresses alternating with pier buttresses of slight development, an arrangement which would be appropriate for a sexpartite system (were it not that these flying buttresses are set opposite the piers which in a sexpartite system would be the intermediate ones), but which is illogical in the regular system that actually exists. In this building we have, then, at a period when the Gothic of France was almost fully developed, an instance of a practically Romanesque design modified by the incorporation of some Gothic features. It is a transitional building only in the limited sense in which it is proper to call anything transitional in England. That is to say, it is a building in which the pointed arch takes the place of the round arch in the vaulting as well as in some other parts; but it is not transitional in the way that the earlier French buildings are, because it exhibits no original and fundamental structural innovations. Everything that is done here had been better done in France at least half a century before.

<sup>1</sup> Cf. Sharpe, *Chichester Cathedral and St. Mary's, New Shoreham*.



Conspicuous instances of a peculiar and extensive class of early pointed buildings in England are the ruined abbey churches of Byland and Whitby. The pointed arch prevails throughout these buildings except in the aisle openings of Byland and in the encompassing arch of the triforium of Whitby. But the naves of these buildings had no vaulting, and were evidently not intended to have vaulting, though shafts, like vaulting shafts, rise from corbels, situated a little below the triforium string, to the top of the wall. These shafts are thus only decorative features, and the buildings throughout, notwithstanding their pointed arches and rich mouldings, are the same in principle as those of the round-arched Romanesque. They consist of massive walls with timber roofs originally over their naves without any consistent organic framework of a Gothic nature. Rievaulx Abbey, a building in other respects of the same class, had a vaulted nave; but the remains of this system show that it had little true Gothic character. The vault ribs all spring from the same level. The vaulting shafts do not form parts of the lower piers. Nothing like the Gothic pier, rising through the successive stories, exists; and although there are remains of flying buttresses, they are so weak and so low that they could have had little more than an ornamental value.

In the ruins of St. Joseph's Chapel, Glastonbury, dating from 1184, are remains of vaulting of true Gothic character; but the other parts of the building are wholly without a corresponding development. It is a small, single-aisled structure of rich and beautiful Norman design.

A nearer approach to Gothic construction is found in the early portions of Ripon Cathedral. The internal systems of the choir and transept of this monument (dating from the latter part of the twelfth century) exhibit features that are closely similar to the twelfth-century Gothic of France. The vaulting, however, for which admirable provision is made, seems never to have been carried out. Only three bays of the north side of the choir retain their original form. In these a group of five vaulting shafts in each pier rise from the capitals of the ground-story arcade. These shafts are crowned with appropriate capitals at the level of the clerestory string, in evident preparation for a full system of vault ribs. But the intended vaulting not having been constructed, a clerestory wall was

added with a level cornice, and a single shaft was carried up to the top of the wall from each group of vaulting capitals.<sup>1</sup> In the transept the likeness to French Gothic is still more marked. There only three vaulting shafts occur in each pier; but they all rise from the pavement, so that, with appropriate vaulting, this transept would be almost identical in structural character with contemporaneous work in France. The outer openings of Ripon are small and round arched, as in early transitional Gothic, and the massive walls are provided externally with shallow Romanesque buttresses.

It will be seen that the buildings thus far noticed are very diverse in character, though in all of them the pointed arch is more or less employed. In some instances this arch is used with a structural purpose in portions of the edifice only, as in the aisle vaults of Malmesbury; in others its use is more general and a functional system of supports is connected with it, so that a really Gothic character largely pervades the work, as in the choirs of Canterbury and Lincoln. But in the greater number of cases the pointed arch is used without genuine structural significance, and in hardly a single case do we find any approach to a true Gothic skeleton. Taken together, these early pointed monuments of England do not exhibit such unity and consistency of inventive purpose as would mark the growth of an original and peculiar structural development. A further illustration of this is afforded by the aisle vaulting of the nave of Peterborough (Fig. 114), which, though dating from the last quarter of the twelfth century,<sup>2</sup> is of a primitive Norman form with low segmental groin ribs. In comparison with this the aisle vaulting of the Church of St. Étienne of Beauvais (Fig. 17, p. 54), more than half a century earlier, is a work of advanced character.

The lack of a truly Gothic spirit among the mediæval architects of England becomes more marked in the thirteenth century, as the so-called early English style takes form. The works of this period are distinguished by the general adoption

<sup>1</sup> I have not examined the system of Ripon Cathedral on the spot. The piers, up to the clerestory level, are shown in photographs as described in the text, while the form of the clerestory is given on the authority of Sharpe (*Seven Periods of English Church Architecture*, plate vi). This choir was lately covered with a wooden imitation of vaulting designed by Sir Gilbert Scott.

<sup>2</sup> Cf. King's *Handbook to the Cathedrals of England*, London, 1862, pp. 55, 56.

of the pointed arch in their design, but rather for decorative ends than as the result of structural necessities, and by the development of peculiar features in the vaulting and the members connected with it, which add nothing to the strength, but much to the intricacy, of the construction. Among the most important as well as among the earliest of these is the nave of Lincoln, erected between 1209 and 1235. The employment in vaulting of ribs having no necessary function, which we find first in the choir of the same church, reappears in the nave,

FIG. 114. — Aisle vault of Peterborough.

where numerous superfluous ribs are introduced. This practice seems to have had a singular fascination for the English builders; and the predilection for such ribs gathered strength as the native taste asserted itself more and more until, in the so-called fan vaulting of the perpendicular style, — the first style of architecture that can properly be called English, — the rib system becomes a complicated network forming elaborate panelling on the surface of the vault.

In the vaults of the nave of Lincoln there are six unnecessary ribs in each vaulting compartment; namely, four *tiercerons*,

*a* in the plan, Fig. 115, and two *liernes*, *b* in the same figure. The longitudinal arches have an approximately elliptical form, and they spring from a level not much above that of the springing of the transverse and diagonal ribs, in consequence of which the vaulting conoid (A, Fig. 116), midway between the springing and the crown, has the section shown at B in the same figure. Thus here again the vault thrusts are not gathered upon the pier in the true Gothic manner. It will be seen also, in the section B, that the ribs of these vaults are so arranged as to give a convex curve to the surface of the vaulting conoid. This peculiarity marks an early step in the direction of that fan vaulting which, as just remarked, subsequently became a

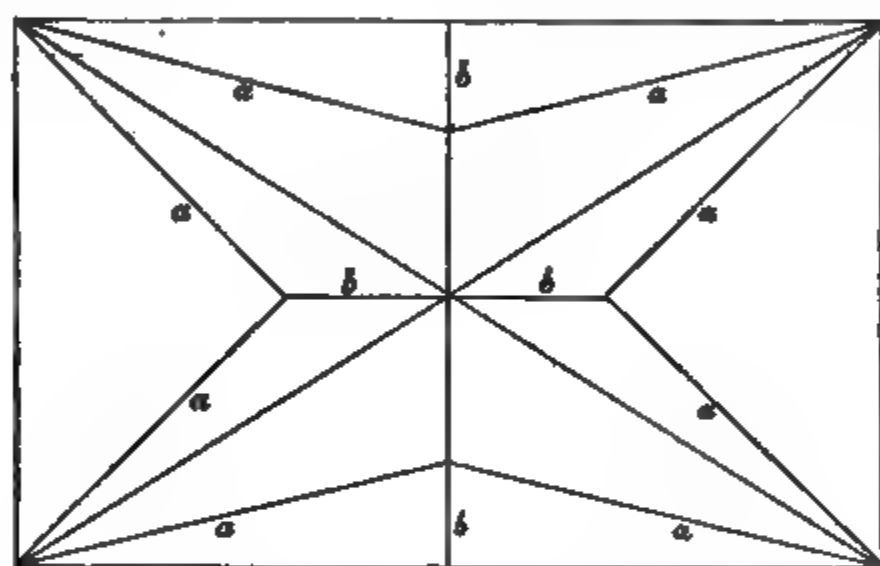


FIG. 115.

conspicuous feature of English pointed design. The rib system of the nave of Lincoln is mainly supported by the wall, which it penetrates, rather than by the vaulting shafts below. These vaulting shafts consist, in each pier, of three very slender and compactly grouped members which rise from a corbel placed just above the great ground-story capital. They are too slender to be effective even to the eye; and are thus, like the vaulting shafts of Byland and Whitby, rather decorative than structurally necessary features. The grouping of members in the lower piers has reference to the arch orders of the ground-story arcade and to the vaulting of the aisles only; they are entirely unrelated to the high vaulting. These lower piers are of three varieties, whose sections are given at A, B, and C, respectively, in Fig. 117. The small detached shafts of A and B are in two monolithic sections, and are bonded with the pier

by a projecting band at their junction. The engaged shafts, with the keel fillets of the section C, are built up in courses with the main body of the pier. These are, indeed, pretty sections, and the actual piers are objects of much beauty, but their want of connection with the vaulting excludes them from the category of strictly Gothic forms. The clerestory is again of the Anglo-Norman type, which retains a good deal of solid wall

beneath the arch of the vault. Both it and the triforium differ from those of the choir in their proportions and ornamental details only.

All the interior arcades of this nave have hood mouldings, which increase the effect of multiplicity in the lines of the arches — an effect that was evidently pleasing to the Anglo-Norman taste even as early as the time of the construction of the archivolt of Malmesbury. The vaults of the aisles are in five cells (as are those of the choir also) — a half-intermediate transverse rib on the wall side dividing into two parts what would otherwise have been a single cell. This half-rib is carried by a monolithic detached shaft resting on a corbel placed just above the string-course which

A

B

FIG. 116.

runs along the wall at the level of the window sills. The main transverse ribs of the aisle vaults are carried by responds consisting of five closely grouped monolithic shafts, while a cusped arcade is carried along the aisle wall.

The buttress system of the nave of Lincoln is, like the internal system to which it belongs, largely wanting in structural efficiency and completeness. The clerestory wall is unbroken externally by pier buttresses. It has a continuous

shafted arcade of alternate groups of three wide arches opening into the nave, and three narrow blind arches. The central blind arch in each group occupies the place that would be taken by a pier buttress in any logical buttress system, and against the wall enclosed by this arch the head of the flying buttress abuts, with the effect, to the eye, of piercing the wall. The level of this abutment is but little above the line where the aisle roof meets the wall, and the very small pier buttress—which rises through this roof to the intrados of the abutting arch—is hardly noticeable in a general view of the building (Fig. 118). A comparison of this clerestory with that of the nearly contemporaneous clerestory (Fig. 76, p. 151, and Plate III) of the nave of Amiens will afford an instructive illustra-

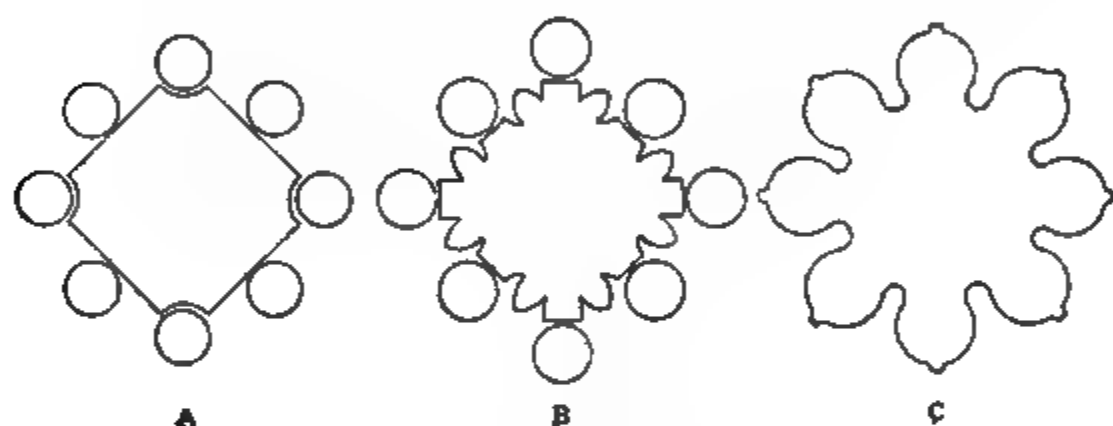


FIG. 117.

tion of the difference between Anglo-Norman pointed construction and that of the true Gothic, in this important part of an edifice.

The Cathedral of Salisbury is commonly considered as exhibiting the early English style in its purest form, and it is therefore an important building for comparison with the new architecture of the Continent. The structure was begun in 1220, contemporaneously with the nave of Amiens, and the two buildings may be taken as fairly typical of the respective styles. The nave of Salisbury is roofed with quadripartite vaults of greater simplicity than those of either the choir or the nave of Lincoln. The rib system contains none but functionally necessary members, and in this system, as well as in the forms of the vault surfaces, there are many points of likeness to French vaulting. The most important of these is that which results from the forms of the longitudinal arches which rise for some

distance in a line more nearly approaching a vertical than is common in England, and give something of that concentration of thrusts, and those necessarily twisted surfaces, that characterize the true Gothic. Figure 119, a perspective view of one of the vaulting conoids, will illustrate this. In this vaulting the longitudinal arch is provided with a more pronounced rib than is usual in English buildings. An important structural defect,

however, will be noticed in the absence of upright supporting members for the rib of this arch. The longitudinal ribs have no visible supports whatever; they penetrate the vault surfaces at a considerable height above the springing, and leave the reëntrant angles, formed by the vault and the clerestory wall, exposed to view.

Below the vaulting a wide departure from Gothic principles of design is manifest. There is no connection between the vaults and the lower stories of the structure. The extremely short vaulting shafts rest on corbels situated far above the springing of the triforium arches; and thus no continuous upright members embrace even two of the stories of the edifice, and there

FIG. 118. — Nave of Lincoln.

would be hardly less of an organic structural system if the vaults were carried on corbels alone. The ground story and the triforium are continuous arcades without division into bays, and the unbroken string between them makes a pronounced horizontal line from end to end of the nave. The design has no features below the clerestory that would convey the idea of a vaulted structure. The clerestory is heavily walled in, as is usual in England, and is lighted by the

customary threefold openings. Thus here as elsewhere in the English pointed architecture of the thirteenth century the openings remain merely windows in walls, while in the contemporary Gothic of France the whole clerestory space is occupied by one vast opening, as in Plate III. The triforium consists of a very obtusely pointed arch of three orders encompassing two lesser arches, each again embracing two still smaller ones. The great encompassing arch is necessarily so depressed as to accord ill with the more acute forms of those with which it is associated, and its slightly curved sides form awkward angles at the springing. The great arches of the ground story, like most of the other arches throughout the building, are equilateral — that is to say, the centres of their curves are in the angles of the bases of equilateral triangles, and are thus at the points of springing. This form of arch, or one closely similar, generally prevails in France. It is also very common in England — as in the Chapel of the Nine Altars at Durham, the Presbytery of Ely, and in many of the abbey churches — as Tintern, Bridlington, Netley, Rievaulx, Whitby, Byland, Kirkstall, and others. But the distinctively Anglo-Norman type is rather the lancet form, the centres of whose curves lie beyond the points of springing, right and left — as in the smaller arches of the nave of Lincoln, and the pier arches of Westminster Abbey. The arch sections of this nave are rounded in conformity with the usual Anglo-Norman custom, and the archivolts are everywhere provided with hood moulds. The

FIG. 119. — Salisbury.



lower piers are composed of four mutually engaged round columns of coursed masonry, with four slender monolithic shafts set at their intersections, the whole forming a compound member whose parts correspond with the orders of the superposed arches.

The buttress system of Salisbury is very imperfectly developed. Nothing more than a pilaster strip is employed externally. Beneath the aisle roof flying buttresses are brought to bear against the springing of the vaults; but the lateral pressures are almost sufficiently provided for by massiveness of wall construction — the wall at the level of the clerestory being about two metres thick. No continuous pier reaching from the pavement to the external cornice occurs in the fabric, no external flying-buttress system is employed, and consequently there is no functional framework, as in true Gothic design. It is essentially a walled edifice hardly less ponderous than Durham itself, notwithstanding its pointed arches, its multiplied mouldings, and its slender shafts, which give it a lighter appearance, and, to a superficial eye, somewhat of Gothic effect.

Perhaps the next English cathedral of importance, though it is not a building of the first magnitude, is that of Wells, whose nave and transept, erected during the episcopate of Bishop Jocelin (1206–1242), are contemporaneous with the naves of Lincoln and Salisbury. In the nave of Wells we have a repetition of some of the peculiarities which have just been noticed in that of Salisbury, while it exhibits some other features that are still farther removed from Gothic forms. Here, as at Salisbury, the vaults are, indeed, of true Gothic character, but the substructure is not correspondingly so. The vaulting shafts descend but little way below the clerestory string, and thus the nave, below the vaulting, is not divided into bays by continuous upright supports. The triforium is an unbroken arcade of narrow pointed openings, without encompassing arches gathering them into groups, extending the whole length of the nave in a wall of Norman massiveness. The piers and pier arches are excessively ponderous, though their effect is lightened by numerous subdivisions into shafts and mouldings. The buttress system consists, again, of concealed flying buttresses and external pilaster strips. Thus with Wells as with Salisbury there is no real skeleton to the building. Its stability

resides in its heavy walls as much as that of any Romanesque structure. I have likened Salisbury in point of structure to Durham; Wells is in some points strikingly like an even earlier Norman building—the Abbaye-aux-Dames at Caen.

FIG. 120. — System of Nave of Wells.

This likeness is partially illustrated by Figs. 120 and 121,—portions of the interiors of Wells and the Abbaye-aux-Dames respectively. It will be seen that the triforiums are almost identical in character, that the imposts in both buildings are

continuous—that is to say, there are no capitals or mouldings at the springing of the arches—and even the sections

FIG. 121. — System of the Abbaye-aux-Dames.

of the jambs and arches are the same. If the drip mouldings were removed from the triforium arches of Wells, the only

difference between the two examples would be that the one has round and the other pointed arches. But the Abbaye-aux-Dames is not, like Wells Cathedral, devoid of continuous vaulting supports. It has shafts rising from the pavement and thus dividing the nave into bays in the manner that is common to organic vaulted architecture — both Romanesque and Gothic. The lower piers and pier arches are, moreover, actually lighter than those of Wells, though, owing to their fewer subdivisions, the general effect is more ponderous.

The structural system of the Abbaye-aux-Dames is logical and organic as far as it goes, and in this respect it approaches the nature of Gothic. But Wells, though a building of the thirteenth century, fails to be Gothic because it has no such system as a basis for its ornamental features, which have more or less of Gothic character. There is moreover, in other features besides those already mentioned, a close similarity between these two monuments, notwithstanding that they are at least a century and a half apart in date. Both are essentially heavy walled edifices, both have their flying buttresses concealed beneath the aisle roof, and both display only pilaster strips against the clerestory wall. In still other points, also, the likeness largely holds. The triple openings of the clerestory and the great lantern at the crossing of nave and transept — features which have been regarded as peculiarly English — are common to both.

Indeed it may be said of most early English churches that in general form and construction they differ little from the Norman Romanesque. The choir of Ely, the choir and smaller transept of Worcester, the great transept of Lincoln, the choir of Chester, the transept of York (which has no vault but a wooden imitation of a vault), and other similar buildings, present substantially the same characteristics. So plain, indeed, is the identity of essential structural forms that one has only to make even a general comparison in order to perceive that the early pointed architecture of England is mainly a Norman product somewhat modified by native English influence on the one hand and French influence on the other, and that it is, at most, very imperfectly Gothic.<sup>1</sup>

<sup>1</sup> While we are thus forced to regard the pointed architecture of England as fundamentally lacking in that organic consistency and completeness which marks the

Westminster Abbey is, however, an exception and is, after the choir of Lincoln, the most Gothic structure in England. It has a complete and continuous vaulting system and a Gothic system of buttresses. The magnificent vaulting of the choir is carried on supports of majestic proportions, and the general effect of the interior is surpassed by that of few continental monuments. The choir of Beverley Minster has something of the elevated proportions of Westminster, but its general system presents the same lack of Gothic character that we find in most other English monuments. Its vaulting has, indeed, no superfluous ribs, but the ribs which it has are not so adjusted as to give the vault the true Gothic form.

Nor are Gothic principles carried out more fully in the later structures of the thirteenth century in England. Of these later structures one of the most famous is the Presbytery of Lincoln, which dates from about 1270. Its vaults have, in addition to the true functional ribs, two *tiercerons* in each compartment. These ribs all spring from the same point, which is situated a little above midway between the triforium and clerestory strings. The longitudinal rib, hardly more than a moulding, interpenetrates at the springing, so that only one of its fillets is disengaged below the clerestory string. Above this level it soon emerges completely. The vault surfaces are slightly winding above the springing; but the twist is soon lost, so that the vaulting conoid, at half the vertical height of the vault, is nearly square; and the courses of masonry, which are practically parallel and level all the way up to the crown of the vault, are nearly perpendicular to the wall. Hence the ridges are level, and the surfaces are but slightly concave. The form is nearly that of a simple intersecting pointed vault—a form which Gothic vaults never have. Five small and compactly grouped vaulting shafts carry the five greater ribs, which interpenetrate at the springing and become greatly reduced in total bulk, and in the numbers of their mouldings. The mouldings of the transverse, diagonal, *tierceron*, and longitudinal ribs, which are respectively as at A, B, C (Fig. 122),<sup>1</sup> are reduced by interpenetrations to the impost section shown at D in the same figure.

true Gothic style, and as thus inferior in architectural nobility to the Gothic of France, we may yet recognize that it has often a peculiar beauty and expression.

<sup>1</sup> B is the profile of both the diagonal and *tierceron* ribs.

The supporting shafts, though corresponding in number with the three functional ribs of the vault, do not each sustain a rib, as in the French Gothic. The architect was satisfied with an impost having a general conformity in the form of the compound support with that of the load, and did not feel the necessity of a strictly functional relationship between the individual parts of each. The vaulting shafts are as usual stopped upon corbels not far below the triforium string; and the larger members of the lower piers are consequently again arranged with reference to the orders of the pier arches only, while very slender shafts are inserted between the larger ones, for which there are no corresponding members in the archivolt. Here,

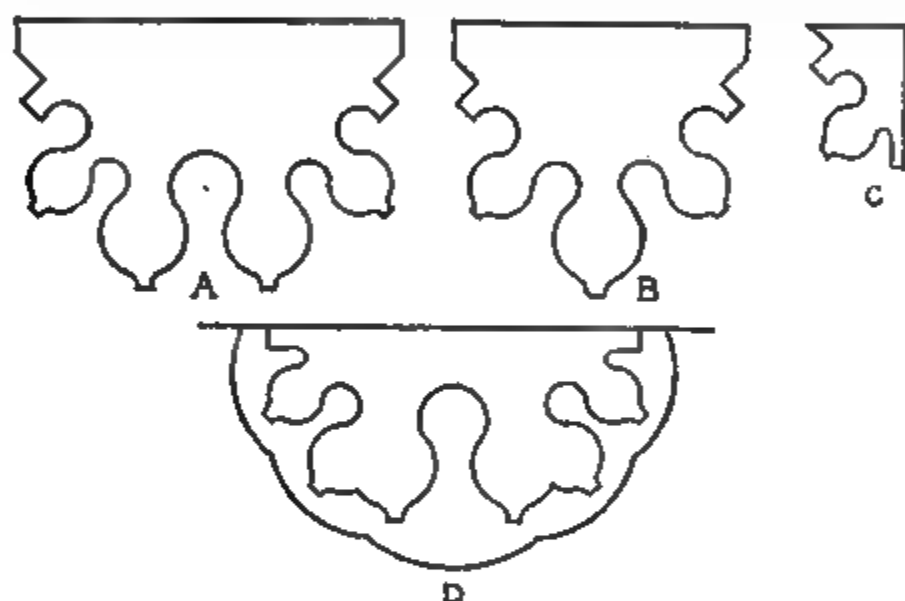


FIG. 122.

then, once more, as almost constantly in Anglo-Norman pointed architecture, the employment of structural members was largely governed by ornamental motives without a logical regard to structural propriety.

The clerestory of this Presbytery is a variation of the early pointed Norman type, and consists of four open arches in each of the two planes — the inner plane having in addition two lesser blind arches filling the wall spaces on either side (Fig. 123). The triforium and lower arcade differ in decorative treatment only from those of the nave and choir. Externally there is no pier buttress whatever — not even a pilaster strip — either above or below the head of the flying buttress. • The wall space between the clerestory openings is very wide, and is adorned with two tall shafted niches, between which, against the face of the wall, the flying buttress is brought to bear (Fig. 124).

The nave of Lichfield, which must be nearly contemporaneous with the Presbytery of Lincoln, differs in some features from the buildings already noticed, though it is not fundamentally different in structural principle. Its vaults exhibit the peculiarity of having no proper transverse ribs. In place of them two ribs in the positions of *tiercerons* spring from each

FIG. 123. — Presbytery of Lincoln.

pier. This would be a bad arrangement from a structural point of view were it not for the presence of a longitudinal ridge rib, an otherwise useless member, which affords abutments to the crowns of these diverging arches. It is an indefensible arrangement by which nothing is gained; and it furnishes another of the many evidences of the Anglo-Norman lack of a fine sense of either structural or artistic propriety. Diagonals and longitudinal ribs, cross-*liernes*, and a secondary rib in each cross-cell are included in the framework of this vaulting. All of these

ribs (except, of course, the ridge rib and the *liernes*) spring from the level of the clerestory string. There is thus no narrowing inward of the vaulting conoid, giving concentration of thrusts against the pier. Three vaulting shafts do duty for eight ribs, but these shafts rise from the pavement and give a degree of Gothic expression which is not common in the pointed architecture of England until the perpendicular period. The clerestory



FIG. 124. — Presbytery of Lincoln.

of Lichfield is unusually low, and consists of a single opening (with geometric tracery) having the peculiar form of an equilateral triangle with three curved sides. The whole edifice is excessively heavy, though, as in so many other cases, the effect is lightened by multiplication of mouldings.

Such are the structural characteristics of the early and middle pointed architecture of England in so far as concerns the longitudinal bays both external and internal. There is no need of further examination of them. Nothing, I believe, is to be



found in other buildings essentially different from the forms and adjustments of those already considered. Hardly such a thing as a continuous pier, all of whose parts are logically adjusted at once to the arcades and the vaulting, can be found in the country except in the case of Westminster Abbey; nor am I aware of the existence in England of an entirely logical and well-adjusted buttress system.

From what has been already said it follows that in England the mode of enclosure, in the pointed architecture of the twelfth and thirteenth centuries, is substantially the same as in the round-arched Norman style. Massive walls pierced with comparatively small openings continue for the most part throughout this period — which in France embraces that of the highest Gothic development. The openings are, indeed, usually larger than they are in the older style, and they are multiplied and gathered into groups so as to give a larger proportion of opening to that of solid wall; but in few cases does the wall wholly disappear, leaving a vast glazed opening, as in the Gothic of France. It could not, in fact, be otherwise, since the Anglo-Norman pointed structure has no such sustaining skeleton of piers and buttresses as would render safe the entire suppression of the walls. It was not until after the middle of the thirteenth century that openings became large enough to require dividing mullions and tracery. And when at length grouped lancets, like those of the east end of Ely and the south transept of York, were replaced by one great mullioned and traceried opening (and some truly magnificent window designs were produced, of which that of the Presbytery of Lincoln is the grandest), even these were still mere openings in walls. Rarely, if ever, in England does the wall wholly disappear, so that the rib of the vault and the archivolt of the aperture become one and the same member, as in the clerestory of Amiens and other French monuments.

Tracery in England, when it comes into use, follows the French models until after the thirteenth century, and therefore requires no description.

The east ends in this architecture are usually square, even in churches of the largest dimensions. The apsidal form is, however, occasionally met with, as at Lichfield and Westminster. Not many of the original east ends have survived; but two

typical and important ones have come down to us—those, namely, of Ely and Lincoln, which date, respectively, from the first half and the second half of the thirteenth century. In both the external design corresponds with the internal division into nave and aisles. These divisions are in each case marked by boldly projecting buttresses, and a higher central compartment is in both surmounted by a gable which follows the outline of the timber roof. In other respects the two examples differ considerably. That of Ely has, in its central compartment, three tiers of grouped lancets—three tall ones of equal height in the lower tier, five shorter ones of graduated heights, following the line of the arch of the vault, in the second tier, and three still shorter ones of nearly equal height, flanked on either side by a lower blind arch, in the third tier. The lower tier embraces in height both the ground story and the triforium, the second tier is in the clerestory, while the third tier occupies the lower portion of the gable, lighting the space between the vaulting and the timber roof. The lateral compartments have been so much remodelled that their original forms cannot be precisely determined, but if their upper walls followed the lines of the lean-to aisle roofs, as they presumably did, the whole composition must have formed one of the most beautiful eastern ends in England.

The east end of Lincoln retains its side compartments, as well as the central one, in their original forms. The central compartment has one vast opening, richly divided by mullions and tracery, which, however, does not completely fill the space between the buttresses,—a narrow strip of wall, with a shafted blind arch, finding place on either side of it. Above this, over the vaulting, is a smaller, though still large, opening of similar character, with two blind shafted arches on either side of it. These arches, including that of the opening, are of graduated heights in conformity with the raking cornices beneath which they fall. The lateral compartments contain each one wide mullioned and traceried window on the ground story, above which is a blind arcade of five arches, and over this again is a gable having no conformity with the shape of the aisle roof, but rising above it as an independent and purely ornamental feature. As a termination for the structure to which it is affixed, this east end of Lincoln is

thus less appropriate and expressive than that of Ely, though, considered as an independent composition, it has considerable beauty.

The east end of Worcester is also worthy of notice. Here the side aisles do not extend to the extreme end, but leave the easternmost bay of the retro-choir without aisles. The exterior design is very simple and monumental. It is enclosed by vigorous buttresses, surmounted with shafted pinnacles, and has a group of five lancets of equal height on the ground story, with a taller group over them of graduated heights, following the form of the vaulting within. In the gable above is a single trefoiled opening. Nothing could be more appropriate or more architecturally effective for a rectangular east end without side aisles.

Transept ends are naturally treated like east ends. Where there are aisles, the façade is divided by buttresses into three bays, as in the east ends of Ely and Lincoln. Where no aisles occur, it is simply enclosed by the buttresses, as in the east end of Worcester. The earlier transepts of Lincoln, Worcester, and Beverley have exteriors which are among the finest in England. In them the so-called early English style attains its most logical, its most monumental, and its most beautiful character. These structures deserve to be ranked with the best architectural achievements of the Middle Ages. The purest work of this kind stands in relation to other mediæval work in England as the Gothic of the third quarter of the twelfth century in France stands to the transitional and the later Gothic. It may be called the classic type of Anglo-Norman pointed art. An exceedingly fine example of this type is the front of the west transept of Beverley Minster, where a beautiful early wheel window occupies the central space in the gable. The wheel window was in England never developed to the vast proportions and magnificence that it attained in the Ile-de-France; though, on a moderate scale, it frequently occurs,—generally at the clerestory level,—as in the west transept of Lincoln, where the so-called Dean's Eye exhibits a beautiful example of plate tracery, while in the south arm of the transept of York we have a fine one with bar tracery.

Of the Anglo-Norman western façade, little in praise can be said. As a rule, it is both inappropriate as a termination

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of the building, and ill composed as an independent architectural design. Very few early façades remain. The existing west ends of the greater number of the larger churches—York, Canterbury, Beverley, Westminster, and many others—were built at later epochs than the main bodies of the edifices to which they are attached. The most important extant fronts of the thirteenth century are those of Lincoln, Salisbury, Wells, and Peterborough. The west front of Lincoln (Plate IX) is a vast arcaded screen, unbroken by continuous upright divisions, with a level cornice repeating its multiplied horizontal lines. A gable following the line of the timber roof of the nave breaks this cornice in the middle, and octagonal stair turrets at each end are crowned with heavy pinnacles. A great central, pointed-arched recess<sup>1</sup> reaches almost to the cornice, and is flanked by two lesser round-arched recesses. In each of these recesses is a round-headed doorway, giving access, respectively, to the nave and side aisles; and a second lateral recess, of much smaller dimensions, on each side, makes up a total central group of five arched recesses. On either side of this group the walls extend for a considerable distance and terminate in the turrets. The face of this wall is enriched by five tiers of shafted arcades which are carried around the turrets, while a single arcade of intersecting round arches flanks the central recess over the subordinate ones; and over this again a sixth tier of tall pointed arcading is carried across the entire front and around the turrets. Behind this great screen, and quite independent of it, rise two lofty square towers with octagonal angle turrets. This façade exhibits four different styles of architecture—the work, respectively, of as many different periods of construction. The three greater recesses (with exception of the pointed arch of the central one) and the lower parts of the towers are early Norman, belonging to the original edifice, which was dedicated in the year 1073; the portals within them are very rich and beautiful late Norman insertions of about 1140; the rest of the great screen is so-called early English, and was probably completed before 1235; while the upper portions of the towers are in the perpendicular style of the fourteenth century. This west front is thus, from an historical point of view, one of the most interesting in

<sup>1</sup> This recess was originally crowned with a round arch.

Europe, but as an architectural combination it is one of the least admirable. Of structural Gothic character it has nothing whatever, and as a termination of a nave with lower side aisles is wholly inappropriate and inexpressive.

Almost equally unrelated to the building with which it is connected is the west front of the Cathedral of Salisbury. This is again a mere screen with a level cornice cut in the middle by the gable of the nave, and with a square turret at each corner. These turrets are crowned with heavy and projecting cornices, above which rise octagonal pinnacles without any features to agreeably unite them. Four lesser pinnacles rise at the four corners of the square tops of the turrets; but these, while they afford some help to the composition, do not suffice to make it a good one. This façade, however, is divided by buttresses, following the lines of the internal divisions, and thus has some degree of conformity with the design which it encloses.

A different, though still a singularly defective, west façade is that of the Cathedral of Wells. It consists of a central portion in three upright compartments formed by buttresses, with two vast towers, one on either side, forming two compartments more. The central portion embraces both nave and aisles of the building, while the towers extend north and south far beyond the walls of the aisles. A vast total width of front again results, for which the builders in England seem to have had a singular predilection. This façade has thus in reality hardly less of a screen-like character than that of Lincoln, though the strongly accented vertical divisions give it a somewhat more organic connection with the main body of the building. The upper portions of the aisle compartments are false walls rising above and masking the aisle roofs, whose lines the level cornices with which they are crowned contradict. The central compartment is also surmounted by a rectangular mass of wall having no more relation to the roof of the nave behind it than the walls of the lateral compartments have to the roofs of the aisles. The portals of English churches are in general insignificant and diminutive, and those of Wells are especially so. They are, in fact, singularly ineffective as features in the total design of the west front, as are also the other openings of this façade, with the exception of three long windows in the central bay, and as at Lincoln and Salisbury, they are very

small in proportion to the extent of wall space in which they are set. They are little more than loopholes, which would give this portion of the building a very fortress-like aspect were it not for the rich arcading and the multiplied shafts which adorn the composition and lighten the effect.

Very different from that of Wells, though hardly better, is the west façade of Peterborough. This design is again entirely unrelated to the building which it encloses. A vast porch of three colossal arches, flanked by towers and crowned with three ornamented gables, chiefly constitute this front. These arches are equal in height, while the nave and aisles behind them are, of course, unequal; and though they vary in width, they do not do so in conformity with the divisions of the interior—the narrower one being placed in the centre opposite the wider nave, and the wider ones at the sides opposite the narrow aisles respectively. The gables have not the slightest relation to the roof contours, and the composition as a whole is as unhappy in architectural effect as illogical in its adjustment to the building.

Thus, as a rule, the west front in England is devoid of Gothic character—which imperatively demands a logical adjustment of part to part. It is, on the contrary, an erection whose parts have little relation to the real structural scheme. Exceptions, however, occur; and among these may be noticed the western façade of Ripon Cathedral, though even here a strictly expressive arrangement is not wholly reached. The side towers are, indeed, true terminations of the aisles, and the three internal divisions are marked externally by continuous, though shallow, buttresses. The central, or nave, compartment is crowned by a gable which conforms with the outline of the roof, and the towers are carried up above this level as in French Gothic façades. A minor defect of the scheme is the placing of all three of the portals in the central bay so that they open into the nave—the lateral tower compartments having no portals. Doorways so small as these are would, however, hardly appear well if arranged in the more logical French manner. Their grouping together here is an effective arrangement for such small openings; and when the design is considered without reference to the building to which it forms the front, it does not appear a bad one. Two tiers of lancets occupy the whole of this central compartment between the portals and the gable;



and the towers are adorned with shafted arcades in four stories. The design, as a whole, with exception of the arrangement of the portals, is appropriate and expressive, and has a good deal of quiet beauty.

The early pointed west front of Selby Abbey also has towers terminating the aisles, and a logical arrangement of the principal parts; and that of St. Albans is good also, with exception of the level cornices which crown the lateral divisions (there are no towers) in disregard of the sloping lines of the aisle roofs.

In the early pointed architecture of England western towers, when they occur, are less common and less imposing than those of the Gothic churches of France. But the Norman feature of a vast tower over the crossing of nave and transept, seldom adopted by the French Gothic builders, was perpetuated in England with admirable effect. Provision for such a tower was made in nearly every church of importance in the island. But in many cases this tower now exists as a mere beginning — reaching but a little way above the roof of the nave. Most of those extant, which are carried higher, are of a comparatively late period, and in the perpendicular style, as at Worcester, Gloucester, Canterbury, and York. I do not know of any remaining completed crossing tower of the early period; but the magnificent central tower of Lincoln, which dates from about the middle of the thirteenth century, retains its original form up to the level of the cornice. It consists (Fig. 125) of three stories above the cornice of the nave. An octagonal stair turret rises against each of its four angles, whose sheer ascent gives a majestic aspect to the structure. The stories are finely proportioned in their relative heights, and the middle one, which is the first that rises clear of the nave roof, is admirably designed, as a base for the great belfry. This middle story has no large openings, but the walls are enriched by a blind arcade of five arches on each side, while a similar arch adorns each face of the turret at the same level. The story beneath (small portions of which only are exposed to view outside of the roofs) is treated in a similar, though not in precisely the same, manner. This lower story, being taller, has a string-course about midway between its base and cornice, which bands the shafts of the arcading. The top story has two vast lancets, each surmounted by a gable and subdivided by a

mullion into two smaller lancets. This tower is hardly equalled in beauty by any other in England; and it is certainly one of the stateliest in Europe.

Few, if any, spires were constructed in England during the twelfth century, and on a large scale they appear to have been rarely erected during the entire early pointed period. Large existing spires, like that of Salisbury, are, for the most part, not of earlier date than the fourteenth century. On a smaller scale a few spires remain dating from the thirteenth century. Of these the spire of Ringstead Church, Northants, erected about the middle of the century,<sup>1</sup> is a good example. The management of the transition from the square plan of the tower to the octagon of the spire is, in such constructions, very admirable, and it is, I believe, peculiar to England. Instead of starting the octagon directly from the square top of the tower, a four-sided pyramid is interposed, which the octagon intersects. By this means no unoccupied spaces occur at the angles of the tower; and the design is both constructively good and artistically agreeable.

FIG. 125. — Lincoln.

Before closing our examination of the pointed architecture

<sup>1</sup> According to Mr. Parker (*An Introduction to the Study of Gothic Architecture*, p. 155) the date of this church is circa 1260.

of England during the twelfth and thirteenth centuries, we may notice the general plan and its relation to the elevation, in which points this architecture differs widely from that of France. Besides the prevalence of the rectangular east end, in which the English church differs from the larger French churches, the further difference is common in England of two transepts, one at each end of the choir. This peculiarity, giving the general plan the form of the archiepiscopal cross, had its origin on the Continent, though it was not widely adopted or long retained there; and hence it has, by some writers, been regarded as having originated in England. That this is not the case, however, is shown by the fact that the great Abbey Church of Cluny, dating from the twelfth century, had this form. Eastward of the east transept is the retro-choir, which is generally as long as the choir proper, and beyond this again is often a lady chapel. These parts, in addition to the long nave, give the central aisle of an English cathedral an enormous length, the effect of which is greatly increased by the comparative lowness of the elevation — a lowness which contrasts strikingly with the soaring proportions of the French Gothic churches. The chief general impression received from the Anglo-Norman interior is that of a prolonged architectural vista, while the external aspect is that of a long low range of gabled roofs and buttressed walls, whose outlines are broken by the projecting transepts, and by the towers of the west end and of the crossing.

This great length and proportionate lowness may have resulted partly from chance, and partly from timidity, — from chance, in the addition at successive epochs of parts that were not contemplated in the original projects, and from timidity, on the part of builders who were not remarkable for constructive daring, in raising and supporting wide vaults at considerable altitudes. But a predilection for length was a peculiarity of the earlier Norman builders, which may naturally have survived in their Anglo-Norman and English successors. The Norman nave of Winchester, for instance, contains twelve bays, that of St. Albans contains thirteen, and that of Norwich fourteen, while in France the nave of the Cathedral of Paris (one of the longest) contains but ten bays, that of Chartres contains but nine, and that of Amiens but six. As to the comparative

heights, it may suffice to say that the choir of Lincoln measures, from the pavement to the crowns of the vaults, about twenty-two metres, while the nave of Amiens measures forty-two. It must, however, be said that the vaults in England are in some cases higher than those of Lincoln, while in France none, except those of Beauvais, are higher than Amiens, though few, if any, are (except those of small churches) so low as Lincoln.

The vaulted polygonal chapter-house is a structure peculiar to England, and it is one of considerable beauty. The plan is usually octagonal, as at Salisbury and York; at Lincoln it is ten-sided. The chapter-house is vaulted on a system of ribs which in most cases spring from a clustered central shaft and from responds situated in the angles of the enclosing walls. The ribs are often arranged with structural propriety; but the supports are not always adjusted to them in an entirely logical manner. The central support at Salisbury, for instance, has but eight shafts to carry sixteen ribs which spring from it.

The openings of the chapter-house have often more Gothic character than those of the church itself. At Salisbury these openings occupy the whole space beneath the vault and between the responds above the level of the low enclosing wall. The internal effect of the chapter-house of this type is very pleasing, but the structure presents no important characteristics that are materially different from those which we have already considered.

A significant fact concerning the architecture of the twelfth and thirteenth centuries in England is that of the almost total absence of vaulting in the smaller village churches. For example, the small church of St. Mary le Wigford at Lincoln, Corringham near Gainsborough in Lincolnshire, and many others (which are typical), consist of a nave and aisles with arcades of pointed arches, usually of two orders, supported on columns whose members are adjusted to the arch orders, and enclosed by plain walls with small splayed and pointed windows, and open timber roofs. These modest buildings are often very charming in both internal and external aspect; in fact, they are in many respects the most interesting monuments in the country, but they are not, in the primary and strict sense, monuments of Gothic style.

It must now, I think, be apparent that the early pointed

architecture of England is, with few exceptions, very different in its nature from that of the same period in France; that, while possèssing much beauty of its kind, it does not, like the architecture of France, bear the marks of a spontaneous structural development; and that in constructive principle it differs little from the Norman Romanesque, of which it is substantially but an ornamental modification. I shall, in the concluding chapter, give further reasons for supposing it to be in the main really Norman rather than English.

## CHAPTER VII

### POINTED CONSTRUCTION IN GERMANY

POINTED forms in architectural design did not appear in Germany at so early a period as in England, nor was their progress so rapid after they began to be used. Indeed, the pointed arch, in connection with structural modifications, had little effect here until the fully developed Gothic of France began to be imperfectly copied about the middle of the thirteenth century. A reason for this may, perhaps, be found in the fact that Germany in the twelfth century possessed a Romanesque architecture which, especially in the important churches along the Rhine, was of a very admirable character, and was well suited to the needs and tastes of the German people. The Rhenish Romanesque was apparently, as we have already seen (p. 40), derived from the Romanesque of Northern Italy, which had been developed under the Lombard influence out of the older round-arched styles, and was thus largely a German art. It was therefore natural that the country should be slow to yield to the influence of the French Gothic movement, notwithstanding that this movement was active in its near neighbourhood and among a people with whom it had close relations. During the early Gothic development in France the German art of building remained wholly unchanged; and while in the latter part of the twelfth century we find some signs of a French Gothic influence, no complete or consistent structural changes were as yet made. Even so important an edifice as the Cathedral of Speyer, the erection of which was nearly contemporaneous with that of the choir of the Cathedral of Paris,<sup>1</sup> was constructed in an unmodified, and imperfectly organic, Romanesque style. The nave is vaulted with round-arched quadripartite vaults in square com-

<sup>1</sup> The Cathedral of Speyer, as it now exists, was, according to Förster (*Monuments d'Architecture*, etc., Paris, 1860), begun immediately after a fire which had in 1159 destroyed an earlier edifice.

partments, each embracing two bays of the side aisles, following the arrangement that had been established in Lombardy, and the organic imperfection of the German Romanesque at this period is shown in the omission of groin ribs. The vaults are furnished, however, with transverse and longitudinal ribs, and are formed on the domical model. The piers are of the general Rhenish Romanesque type, and hardly possess as much likeness to Gothic piers as those which had been designed a hundred years before in the churches of Lombardy and Normandy. The general form of the building is likewise unmodified Romanesque. The clerestory and aisle walls are unbroken by buttresses, and the apse is vaulted with the primitive semidome.

The vaulting of the nave of the Cathedral of Worms, constructed towards the close of the twelfth century (1171-1181?), is a little more advanced, having a full system of ribs, all of which are pointed. This vaulting has not, however, the true Gothic form so far as it results from the stiling of the longitudinal rib. This rib here springs from the level of the main impost, and the vault thrusts are thus diffused over a considerable part of the heavy clerestory wall.

The pointed arch occurs, also, in the vaulting (constructed in the latter part of the twelfth century) of the nave of Mainz; and here the groin rib, too, appears, but in other respects this vaulting, equally with that of Worms, exhibits a lack of Gothic form. Thus, while in a few of the Romanesque churches of the twelfth century in Germany we may find some features that show a Gothic influence, no thorough adaptation of Gothic principles is found, nor are there any signs of an original structural activity such as would constitute a native transitional movement.

In the nave of the Cathedral of Bamberg, built near the end of the twelfth century, the pointed arch replaces the round arch throughout the structural system of the interior (Fig. 126), and the vaulting has a full system of ribs in both nave and aisles. The compartments are nearly square, and each bay is subdivided on the ground story so as to give smaller square vaults in the aisles. The springing of the longitudinal ribs is again at the main impost, and the vaults have the domical form. The transverse ribs are wide and heavy, and of plain square section, but the diagonals have profiles of an early Gothic form, consisting of

an almond-shaped member beneath a square one. The piers retain the Romanesque character, and the vault supports generally consist of a pilaster, corresponding in size with the transverse rib which it carries, with a round shaft on either side of it for the

FIG. 126.—System of Bamberg.

support of the diagonals, and a second square member for the longitudinal ribs. In some of the piers the round shafts are omitted, and the three vaulting ribs are awkwardly gathered upon a simple pilaster of two orders. The easternmost bay has a sexpartite vault, and the bay next adjoining it has an



intermediate shaft in preparation for such vaulting; but this shaft carries nothing, the vault here being quadripartite. There are no triforium openings, and the heavy clerestory wall is broken only by a small round-headed window in each bay. Externally the clerestory has neither buttresses nor pilaster strips. It is as plain as that of a primitive timber-roofed basilica. The general scheme of this building, though constructed at a time when the Gothic of France was nearing its full development, is thoroughly Rhenish Romanesque.

The Cathedral of Magdeburg, begun in the first decade of the thirteenth century, and finished in 1234, is one of the earliest German churches in which the Gothic influence is strongly apparent throughout the whole interior. The building is not, however, completely Gothic even within, while externally, though it has a somewhat Gothic appearance, it almost wholly lacks the characteristics of a true Gothic structure. The nave has oblong quadripartite vaulting on pointed arches, with a full set of ribs. The piers, however, are arranged for vaulting in square compartments, but between the heavy transverse ribs which they carry smaller transverse ribs, springing from small shafts that rest on the clerestory string, are inserted. The vaulting shafts are arranged in compact groups rising from the pavement, and consist of a large round shaft against a pilaster, with a smaller round shaft on each side. The apse of this church is apparently the first of those in which the general Gothic form and proportions occur. It is said by Dehio<sup>1</sup> to have been derived from such French apses as those of Châlons-sur-Marne and Montier-en-der. But while it bears some general resemblance to these monuments, it is singularly unlike them in respect to the Gothic lightness of construction. The vault, though divided into cells and supported on ribs, retains (as do the earliest apsidal vaults in France) much of the form of the primitive semidome. The cells have not the depth that distinguishes developed Gothic apsidal vaulting. The piers are not developed as such. They are merely portions of heavy walls pierced with tall pointed openings, while in each of the angles in which these walls meet a vaulting shaft is set.<sup>2</sup>

The outside system of the nave has some Gothic appearance,

<sup>1</sup> Dehio and Von Bezold, *Die Kirchliche Baukunst des Abendlandes*, p. 496.

<sup>2</sup> Dehio and Von Bezold, *Op. cit.*, p. 495.

which results from an unusually great height of the clerestory, pronounced pier buttresses, and large pointed openings. There are no flying buttresses, but against the smaller transverse ribs and their supports smaller clerestory buttresses are set, which thus alternate with the larger buttresses. The exterior of the choir and apse, as far up as the cornice of the triforium gallery, bears a strong resemblance to the French work of the second half of the twelfth century. The forms of the openings, the profiling and shafting of the archivolts, and the monumental simplicity of the whole design are almost wholly like early French work. One feature occurs here which would hardly be found in a French apse, namely, a corbel-table under the cornice of the apsidal chapels. But these are parts of the building in which the more distinctive external structural features of the Gothic system would not, in any case, be called into requisition. It is in the buttressing of the clerestory that we should look for these, and here the apse of Magdeburg wholly fails to show Gothic character. The apse, like the nave, is without flying buttresses, and not only so, but the angles in which the walls of its sides meet are, save in one or two cases, without even so much as a pilaster strip. The stability of the structure is maintained by the heavy wall construction that we have noticed in the interior.<sup>1</sup>

The Cathedral of Limburg on the Lahn (Fig. 127), which was consecrated in 1235, and is therefore contemporaneous with Magdeburg, has more of the Gothic structural character, though in general external aspect it retains much of the Romanesque form and expression. Indeed, to a cursory glance, the exterior of Limburg has little to distinguish it from a Rhenish Romanesque building. It is, in this respect, much like the transitional monuments of the early part of the twelfth century in France, in which the Gothic character is confined to the interior. Yet the internal system is in reality supplemented by flying but-

<sup>1</sup> There is, indeed, as we have seen, a good deal of massive construction, and an absence of flying buttresses, in some of the transitional Gothic buildings of France; in those buildings, however, the system was first developing, the new principles were not fully reached, and old elements were not yet wholly thrown off. But the German architects of the thirteenth century were not, like the Frenchmen of a hundred years before, feeling their way in an unexplored path. The Gothic system had been fully worked out over the French border, and the Germans were now imitating it without a full understanding of its principles.

tresses of effective form, though on account of the shortness of the nave only one of these occurs on each side.

The vaulting is sexpartite on an alternate system of supports, and the whole interior design bears a close resemblance

FIG. 127.—System of Limburg.

to that of the nave of the Cathedral of Noyon, which justifies the inference that its architect was directly influenced by that monument.<sup>1</sup> All of the vault ribs are pointed, the vaults are

<sup>1</sup> Dehio, *Op. cit.*, pp. 496, 497, supposes it to be derived from Laon and not from Noyon. The likeness is, however, much closer to Noyon. The main piers, having

very domical, and the intermediate transverse rib is stilted to bring its crown up to the intersection of the diagonals. The longitudinal ribs also are stilted and thus the vaults have the true Gothic form. The part of the structural system which conforms least with the Gothic character is the intermediate pier. On the ground story this is a plain rectangular member of considerable bulk, with no shafts or other members incorporated with it, while a single vaulting shaft rises from the triforium string and is crowned with a capital at the level of the main imposts. On this capital are set a pilaster and three small shafts which stilt the intermediate transverse rib and the longitudinal ribs. Like Noyon, this church has a vaulted triforium gallery, and a second triforium consisting of an open shafted arcade. The great archivolts are of a single order of square section, without mouldings and of great thickness. All of the structural arches, and internal arcades, are pointed; but the external openings are in some cases round arched.

A persistence of the Romanesque methods of construction is shown in the vaulting of the aisles and the triforium gallery, where no groin ribs occur. The nave has but two sexpartite bays, and hence the chief thrusts of the vaulting are gathered against the three main piers. In the easternmost and westernmost of these piers the thrusts are met by the walls of the transept and the towers of the west end, respectively. In the middle pier they are met by the flying buttress already mentioned, which consists of two superimposed arches—one beneath the aisle roof and the other carried over it in true Gothic fashion. The intermediate piers of the system have no flying buttresses visible on the exterior.

The choir and apse are both embraced under a single sexpartite vault. This gives but three cells of vaulting, and three unusually wide bays, to the apse—which retains the semicircular plan of the primitive apses. The piers and archivolts are substantially like those of the nave, and each pier has a vaulting shaft from the pavement, carrying a group of small shafts which

grouped shafts which rise from the pavement, reproduce those of Noyon almost exactly. The alternate principle is thus, as in Noyon, carried out in a pronounced form from the ground story upwards. In Laon this is not the case. There the ground-story piers are uniform round columns, and even above the ground story the alternation of main supports and intermediate supports is less clearly marked.

stilt the vault ribs, as in the intermediate system of the nave. The apse is heavily walled, and has small Romanesque openings. In the vaulting of the aisle and triforium gallery of the choir and apse groin ribs occur, and the thrusts are met by flying buttresses like those of the main piers of the nave. Limburg has thus a good deal of transitional Gothic character in its main structural parts, while its ponderous walls, small openings, and general external form are far from Gothic. It is remarkable that when the German builders began to feel the French influence, they should have followed so largely the undeveloped, rather than the developed, style of France which was before them. With Amiens Cathedral in progress while Limburg was building, it appears strange that the primitive Gothic elements alone should appear in it.

The decagon of St. Gereon of Cologne, completed in 1227, has features which more strongly resemble Gothic, though the structure is not more Gothic in reality. The vault has somewhat the form of a French apsidal vault, or rather of two such vaults joined together.<sup>1</sup> It is, however (like that of the apse of Magdeburg), constructed on the primitive model of the vaults of the earliest Gothic apses in which the form of the semidome is still largely retained. The vault cells of St. Gereon are shallow and their crowns are steep like the gores of a melon; and they are supported on ribs which rest on shafts rising from the pavement. The form and construction of this edifice are peculiar. The ground story has a solid wall of great thickness with a deep niche, opening out of the nave, in each bay. Over this is a high triforium gallery, and over the gallery a low clerestory surmounted by a second clerestory of considerable height. The forms of the openings of the triforium, and of the upper clerestory, are like those of early French work, while the lower clerestory has openings of a foliated German type. The archivolts of the lower clerestory are carried on shafts rising from the pavement, which are grouped with the shafts of the vaulting, producing the effect of a Gothic compound pier. Externally a pilaster strip at each angle of the polygon follows the line of the internal support, and a flying buttress springs over the aisle<sup>2</sup>

<sup>1</sup> The decagon of St. Gereon is oval in plan, as two Gothic apsidal vaults would not be, but this is immaterial.

<sup>2</sup> Though there is no aisle on the ground story, the triforium forms an aisle in the second story.

roof, meeting the thrusts of the vaults at their springing. The flying buttresses of Limburg are low and inconspicuous, but effective in adjustment. Those of St. Gereon are unusually high, and yet fail to reach a level at which they would be effective in a building constructed on Gothic principles. They are essentially weak in appearance, and must be so in reality. The vault thrusts are, however, sufficiently met by the thickness of the walls, and by the carrying up of these walls to a height equal to that of the crown of the vault, thus giving weight above the springing enough to secure stability.

The Liebfrauenkirche of Trier (begun in 1227) is regarded by German authors as the first purely Gothic church in Germany.<sup>1</sup> It has a singular plan, consisting of a nave and transept of equal length intersecting each other in the middle, and thus forming a Greek cross. The eastern arm of the nave is lengthened by a choir of one bay with an apse. In each of the reëntrant angles of the cross is an aisle of one bay with a chapel opening out of each of its outermost sides. These aisles and chapels so fill out the angles as to make the general form of the plan circular. This plan is an amplification of that of the east end of the French Church of St. Yved of Braisne, where the aisles and chapels are arranged in precisely the same manner. The German architect in copying St. Yved merely repeated on the west side of the transept the form of the eastern part, thus making the plan symmetrical. The vaulting of the apse is in five cells of perfectly Gothic character. This apse has no aisles, but it is nevertheless divided in elevation into two stories, in conformity with the nave, which has aisles, but no developed triforium, the clerestory order being brought down to the string just over the great arcade which would in most cases be that of the triforium. The triforium space is occupied by the clerestory shafting, the spaces between this shafting being walled up so that the actual clerestory is confined to the traceried arch above the shafts. The nave is thus made to consist practically of only two stories, with which those of the apse correspond. The architectural harmony of the interior thus secured justifies in the apse what is really an illogical division of a structure having no aisle. The apse of Braisne is likewise without an aisle, and

<sup>1</sup> Cf. Dehio and Von Bezold, *Op. cit.*, p. 495; Forster, *Op. cit.*, vol. i. p. 34; and Adamy, *Architektonik des Mittelalters*, p. 241.

it also is divided in elevation into stories corresponding to those of the nave. But the nave in this case, having an aisle, has also the usual triforium, which, like the ground story and clerestory, is carried around the aisleless apse. The ground story of the Liebfrauenkirche is of great proportional height, and it is probably because of this that the usual triforium arcade is omitted. The absence of the aisle in the apse makes the walls between the clerestory shafting unnecessary, and the open character of the

whole design is thoroughly Gothic. All of the vaulting capitals are placed at the same level, and while the longitudinal rib does not appear to spring at precisely this level, there is not enough stilting to have any appreciable effect on the form of the vaulting conoid. In this respect the vaulting of Trier differs materially from that of Braisne, where the twisted surfaces which are essential to Gothic clerestory vaults are conspicuously developed. The Liebfrauenkirche follows Braisne in the use of a single round column on the ground story between the grouped piers of the choir and transept respectively. The capital of this pier is unlike anything French of the best period. It is low, with a round abacus, and does not prepare the column to carry its load in a manner agreeable to the eye. In fact, only a part of the load is carried by the

FIG. 128. — Liebfrauenkirche, Trier.

capital. The three vaulting shafts are stopped on an ill-designed corbel at some distance above, while a single short shaft, resting on the abacus, is interposed (Fig. 128). It is true that in some instances vaulting shafts are carried on corbels in the French churches. But I believe these are always shafts in heavy piers, like those of the crossing, where space is needed on the ground story. This is the case in the crossing piers of

Braisne. Such an adjustment is rare, however, even in such piers, and nothing like the stopping of a group of shafts above a capital will be found in French Gothic architecture. In the piers of Braisne which correspond with those of Trier in which this awkward arrangement occurs, the deep and well-formed capitals of the ground-story columns are corbelled out so as to provide ample space on their abaci for the stately shafts which rise from them (Fig. 129).

In the upper parts of the exterior the Romanesque characteristics persist. The clerestory wall has no buttresses of any kind, and the upper story of the lantern over the crossing is equally wanting in Gothic features. The apse is well buttressed in Gothic form, and the chapels externally closely resemble those of the Cathedral of Reims. Thus while the Liebfrauenkirche is quite Gothic in some parts, it is, on the whole, very imperfectly so.

A curious type of pointed design of this epoch in Germany, which again shows the persistence of Romanesque principles of construction, is that of the east end of the Cistercian Church of Heisterbach (1202-1233?). This monument is in ruin, but enough remains to show its whole system. It bears a singular resemblance to Gothic design in its proportions and general form, without having any Gothic structural character whatever. The vault of the apse<sup>1</sup> is a pointed semidome with a semblance of Gothic form resulting from a division into shallow cells with filleted arrises, but no ribs. This semidome rests on stilted round arches supported on free-standing shafts which rest on the cornice of the ground-story arcade, and on the en-

FIG. 129. — Braisne.

<sup>1</sup> Dehio and Von Bezold, *Op. cit.*, Plate 200, Fig. 1.



closing wall. The ground-story arcade itself has pointed arches on shafts which are supported on a podium. The apse is thus a pretty high one, and it is framed in by a group of tall upright supports on each side carrying a pointed arch of two square orders. It has an apsidal aisle, and a solid wall of vast thickness, with niches like those of the oval of St. Gereon of Cologne, encloses the lower part of the aisle — while above this is a thinner wall pierced with a row of small round-arched openings, forming what may be called an aisle clerestory, since it rises above the roof which covers the niched wall below. Just within the apsidal podium is set a row of supports consisting of two superimposed columns, one behind each of the shafts of the apsidal arcade, with which they are coupled by diminutive arches, over which the inner cells of the groined vaults that cover the aisle are prolonged to the arcade. These shafts and their arches carry the upper enclosing wall of the apse. The system is ingeniously contrived for strength, but it is the strength of inertia, like that of ancient Roman works.

Externally the lower wall has an unbroken surface, while that of the clerestory has buttresses. The thrusts of the upper clerestory vaulting are met by solid buttresses of triangular shape built over the transverse arches of the aisle.

The nave of St. Kunibert of Cologne has very domical sex-partite vaulting on a full system of ribs. Here the transverse ribs only are pointed, while the longitudinal ribs are of an upright elliptical form without stilting. The main piers are like those of Bamberg, and the intermediate transverse ribs are supported by small shafts rising from the triforium string. All the archivolts and external openings are round arched, and the apse has a primitive smooth-faced semidome carried on pointed arches supported by coupled shafts. A narrow triforium gallery, in the thickness of the walls, encircles the apse, with a narrow aisle, having round archivolts, on the ground story. Both triforium and aisle have small barrel vaults with radial axes supported on transverse arches, and thus acting as abutments.

In the Church of St. Elizabeth of Marburg we have an apse which closely resembles that of the Liebfrauenkirche of Trier. Its vaulting and vaulting system are equally Gothic in character, and, in the descent to the pavement of the shafts of the

clerestory vaulting arches, it is even more like the best Gothic design in France. As in Trier, the apse of Marburg is divided into two stories, though it has no aisles to call for such division; and since the nave, also, is without division into stories this arrangement is without justification on the score of architectural harmony. The nave and aisles of St. Elizabeth are of equal height, a mode of construction peculiar to the later pointed architecture of Germany. Other churches of this form are the

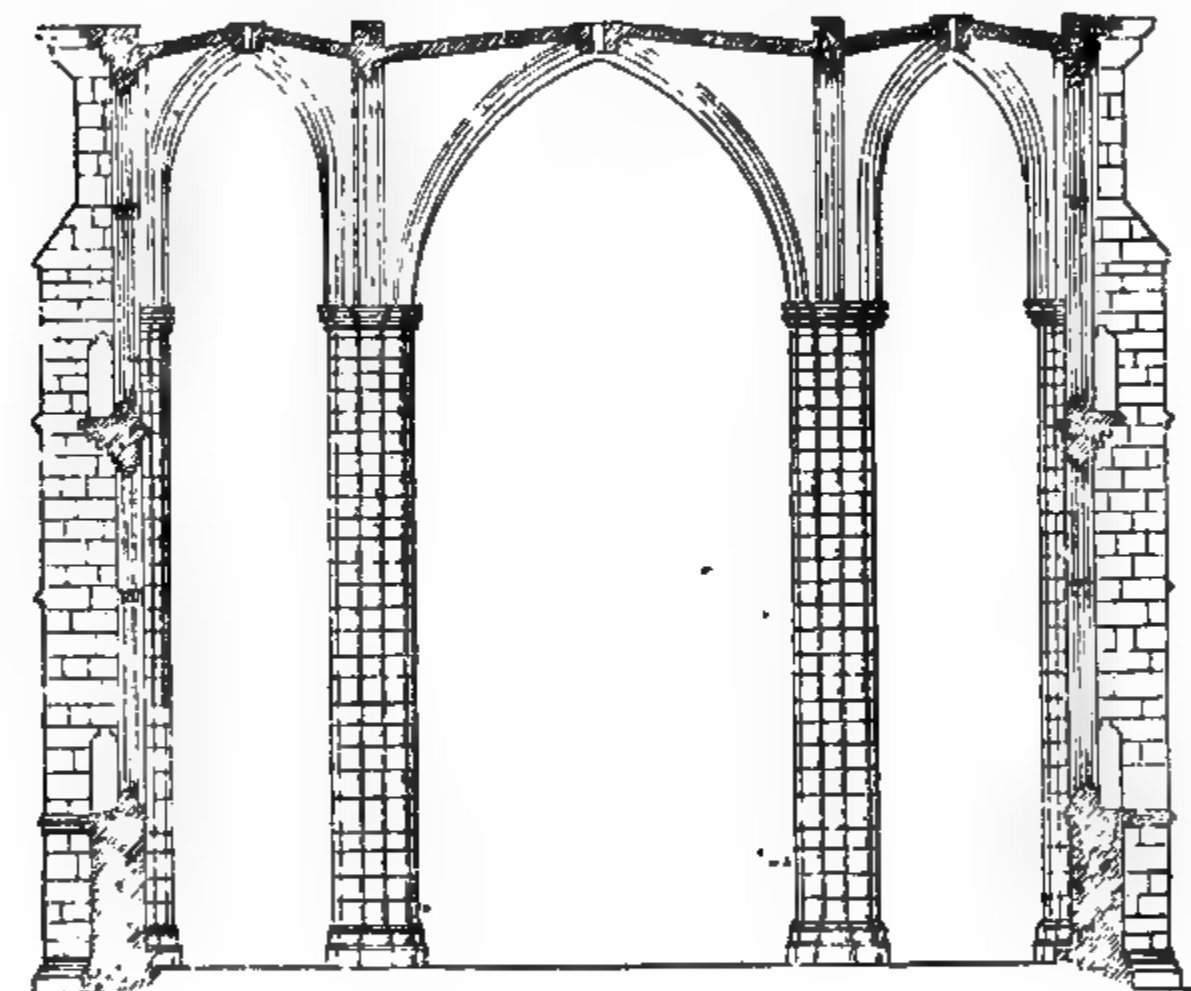


FIG. 130. — St. Elizabeth, Marburg.

Kreuzkirche at Breslau, St. Sebald at Nuremberg, and St. Mary at Mühlhausen. This peculiar form gives an ill-proportioned section (Fig. 130) such as could hardly be found in the true Gothic region of France. The Church of St. Nazaire of Carcassonne has, however, aisles of equal height with the nave; but in general in France, in the comparatively rare instances where the aisles are carried up so high as to prevent a clerestory, they are enough lower than the nave to secure an agreeable proportional relationship of the parts, as in the Cathedral of Poitiers (Fig. 131).<sup>1</sup> But while the Church of St. Elizabeth of Marburg

<sup>1</sup> This figure is copied from Viollet-le-Duc. In a few exceptional instances in the

thus consists of but one story throughout, its enclosing system is, like that of the apse, divided into two stories, which is a needless violation of expressional integrity.

The most complete carrying out of the Gothic structural system which occurs at this epoch in Germany is found in the nave of the church of SS. Peter and Paul at Neuweiler. This nave has oblong quadripartite vaulting with stilted longitudinal ribs, well-adjusted pier supports, and effective flying buttresses of early Gothic form.

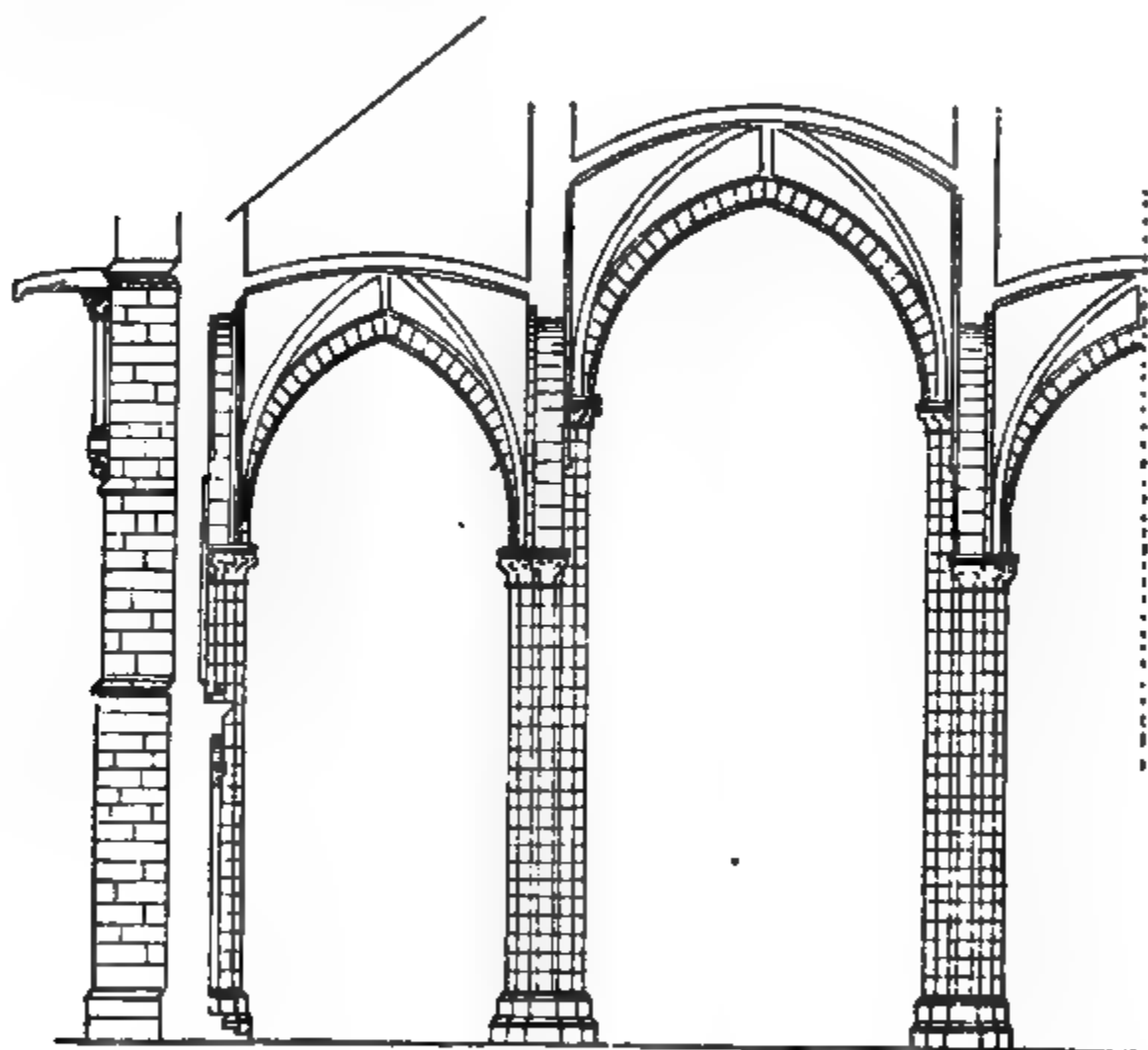


FIG. 131. — Poitiers.

Other German churches of the early part of the thirteenth century — Bacharach, Bonn, Basle, the nave of St. Sebald of Nuremberg, Gelnhausen, and others, have many Gothic features which often closely resemble the best French types, but in few of them are the Gothic structural system fully carried out and the Romanesque elements wholly thrown off. These monu-

Ile-de-France something similar to this arrangement occurs, on a small scale — as in the village churches of Vernouillet and Feucherolles (Seine-et-Oise) — figured in M. de Baudot's *Églises de Bourgs et Villages*. Paris, 1867.

ments show that Germany yielded to the Gothic influence very slowly and imperfectly — in most cases doing little more than to engraft some Gothic features upon architectural designs of essentially Romanesque character.

Even after the middle of the thirteenth century, though a fuller Gothic character and expression then began to prevail, most German pointed churches still remained very imperfectly Gothic. The nave of the Cathedral of Freiburg, completed in 1270, may be taken as an example. While the soaring proportions of this nave are very fine, and the structural features, including a majestic system of vaulting shafts, have a general Gothic aspect, the vaulting conoids are not narrowed against the pier in true Gothic fashion, the triforium space has an unbroken wall, and even the clerestory is heavily walled in. Externally this clerestory wall is unbroken by pier buttresses, and although elaborately wrought flying buttresses form a part of the system, they each consist of a single arch, which, in the absence of a strong pier buttress, would not effectively resist the vault thrusts were it not for the strong clerestory wall. The true Gothic flying buttress of the developed type consists, as we have seen (p. 150), of two superimposed arches, which together effect a perfect counterthrust to the vaults, the lateral pressures of which are not confined to a single point, but extend over a considerable distance up and down the pier. A glance at Fig. 76, p. 151, will make clear the difference between the perfectly Gothic buttress system, as exhibited in the nave of Amiens, and the imperfect buttressing of Freiburg. It is true, indeed, that in the early Gothic of France the flying buttress usually consists of a single arch,<sup>1</sup> but notwithstanding that in the early Gothic buildings where single flying buttresses occur a considerable amount of solid wall strengthens the clerestory, yet the French builders usually took care to reënforce the piers against the vault thrusts by well-developed pier buttresses in addition to the flying buttresses. The functional members of the system are all necessary to the full development of the Gothic character of a building, and where any of them are wanting the structure cannot, of course, be completely Gothic. The imperfectly Gothic character of transi-

<sup>1</sup> See above, p. 144.

tional monuments is a natural condition of early progress; but a similar character in those of an advanced period indicates either misunderstanding of Gothic principles or a preference for those of the Romanesque. Whichever it be, such buildings cannot be classed with those of a true Gothic type.

Strasburg Cathedral, begun in 1277, has a different character. The interior of the nave of Strasburg is truly Gothic in its structural form. The longitudinal arches are much stilted, giving the vaults an effective concentration of thrusts against the piers, and the vaulting shafts are functionally adjusted from the pavement. The clerestory opening fills the whole space between the piers, and the triforium has an open gallery. The flying buttress still consists of a single arch; but a shafted pier buttress reënforces the pier at the springing of the vaults, and the whole design has a great deal of French character.

But the most conspicuous, and the most thoroughly Gothic, pointed monument of the thirteenth century in Germany is the vast choir and east end of the Cathedral of Cologne. In Cologne the Gothic structural system is completely and magnificently carried out, and no elements of Romanesque are retained. The choir alone dates from the Middle Ages—having been begun in the year 1248 and consecrated in 1322. The great French models, Amiens and Beauvais, which directly prompted the erection of this building, were closely followed in the structural forms and general proportions. As in the purest French Gothic, the vaults of Cologne have only the functional ribs, the twisted and domical surfaces are distinctly developed,<sup>1</sup> and the principal upright supports are compactly grouped and continuous from the pavement. The ground-story archivolts reach high, leaving the smallest possible spaces of wall over them, while from the level of the triforium-string upward to the vaulting no wall whatever exists. In this the choir of Cologne follows that of Beauvais rather than that of Amiens. In Beauvais (as we have already seen, p. 142) the Gothic system received an exaggerated development. This is shown not only in the enormous scale of the structure, but also in the extreme length to which the multiplication and enlargement of the open-

<sup>1</sup> Mr. Fergusson, *History of Architecture in all Countries*, vol. ii. p. 62, speaking of Cologne Cathedral, says: "We find it with all the defects of French vaulting—the ribs are few and weak, the ridge undulating, the surfaces twisted, etc."

ings were carried. In the choir of Amiens one step in the direction of over-development was taken in the omission of the enclosing wall, so that the triforium could be lighted like the clerestory; but the wall spandrels over the arches of the triforium were not removed. In the triforium of the apse of Beauvais these spandrels are so diminished that hardly any wall remains, and in the straight sides of the choir all wall surfaces disappear from the triforium—their place being taken by open tracery. The last condition was reproduced in a uniform manner throughout the triforium of Cologne. This vast interior thus has a more complete effect of a *cage à jour* than is to be found in any monument of the best period in France. But it is an effect of doubtful value, since to obtain it the aisle roof has to be covered in a manner that is not favourable for the ready discharge of rain and snow. The best way to cover the vaulting of the aisle is by a lean-to roof, as in the nave of Amiens, and this necessarily encloses and darkens the triforium. The choir of Cologne is, however, structurally a magnificent Gothic design; but it is in no sense a German product. It is wholly an importation from France. In other respects it differs widely from the pure Gothic. Its mouldings and ornamental carving are in thoroughly German taste, and have nothing of the character of French work.

Hardly any pointed buildings in Germany show any materially different characteristics from those of the monuments already considered. There is no evidence in this architecture of any native Gothic development—and, indeed, the fact that the pointed architecture of Germany was directly derived from that of France is now generally admitted by competent German writers. But it is not yet seen that the borrowed forms were seldom so used as to produce what may be correctly called a Gothic result. An instance, like that of Cologne, where a structural system radically different from the native one is fully carried out is exceptional, and in fact unique. As time went on, the German architects introduced many meaningless structural modifications and details which gave a more distinctly German impress to pointed buildings without rendering them more truly Gothic in character. Vaults were needlessly broken up into a variety of curious forms by ingeniously contrived arrangements of multiplied ribs; studied complexities of form were in-

troduced in traceries, profilings, and even in more structural parts — until at length Germany had a pointed architecture which was as peculiar to itself as was the perpendicular style to England. But this architecture, equally with that of the English perpendicular style, is far removed in character and merit from the pure, refined, and monumental Gothic art of France.

Western façades, east ends, transept ends, and towers and spires in Germany call for no extended remarks. Like the features already considered, they either retain much of the Romanesque character, or are, for the most part, made up of elements borrowed from the later Gothic of France variously modified by the German taste.

The west façade exhibits little change until after the middle of the thirteenth century. That of Limburg, for instance, is thoroughly Romanesque in general form and expression. Its square towers, divided into five stories by strongly marked horizontal lines, rise vertically to the belfry cornices. Each story has broad and shallow pilaster strips on its angles, with a narrower one on each face; and these are connected alternately by corbel-tables and blind shafted arches. In the openings, which are small, the pointed arch for the most part prevails, but the round arch also appears in places, as in the transitional architecture of the Ile-de-France of a hundred years before. The central bay has a splayed and pointed portal of several shafted orders of considerable magnitude — which does not, however, fill the whole space between the towers. A pointed blind arcade of three arches occupies the story above, while a large rose window, with small circular piercings, nearly fills the square of the clerestory compartment. There is thus very little departure from the general Romanesque scheme in this façade.

The façade of the Lorenzkirche of Nuremberg dating probably from the second half of the thirteenth century, exhibits a strange combination of Romanesque and Gothic features. The towers are, like those of Limburg, divided into stories by strongly marked string-courses. They are very tall, and their walls rise vertically to the main cornices. Shallow pilaster strips strengthen the angles of the uppermost three stories, while against the remaining stories below strong Gothic

buttresses with set-offs are placed. All of the string-courses except the lowest two have corbel-tables with pointed arches. A single pointed opening breaks the face of each story below that of the belfry, except in the second story of the north tower, which has a depressed round-arched opening. The belfry has a large rectangular opening with six mullions, whose intervals are spanned by small pointed arches corresponding to those of the corbel-tables in the stories beneath. The belfries are surmounted with spires to be presently noticed. The central bay has a large pointed and splayed portal of unusual proportional height, but still a considerable space of wall remains on either side of it. Over this is a vast circle, filled with elaborate tracery and extending across the whole width of the bay, which, on first sight, appears like an opening. In reality, however, the opening is bounded by an inner circle of not more than half the diameter of the larger one—the tracery between the two being wrought upon the solid wall. A richly ornamental gable of open stonework crowns this central bay. The whole composition affords further evidence of the slight hold which Gothic principles had on the minds of German architects even at this late period. The towers, in their structural forms and leading lines, are like those of the Lombard and Rhenish Romanesque, and they are carried to a proportional altitude which exceeds that of Gothic towers.

In the Church of St. Elizabeth of Marburg the west front, which also dates from the second half of the thirteenth century, has a distinctly Gothic form throughout. The vertical divisions are logically related to those of the interior, and the towers are strengthened by vigorous buttresses with set-offs extending to the full height, and giving pronounced upright lines and a slightly pyramidal outline. The central portal now fills the whole width of the middle bay, and the very high belfry stories each have a tall lancet opening in each face. The total composition is simple and severe, and in its larger features it closely resembles the French Gothic.

Toward the close of the thirteenth century the west front in Germany began to receive the more elaborate and peculiar treatment which is most characteristic of the pointed design of the country. In this later German art the façade is not always so logically composed as it is in the art of the earlier



time. The west front of the Cathedral of Strasburg, for instance, is divided into stories which have no correspondence with those of the interior. The ground story embraces both the ground story and the triforium of the nave, the great rose opening of the second story reaches above the vaulting, while the top story corresponds to nothing whatever in the building, being completely above the apex of the timber roof over the nave.<sup>1</sup> This façade dates from a period when the French Gothic was already in a state of decadence, and features derived from the flamboyant style of France, but treated in a peculiarly German manner, are freely used in it. The acute open gables over the portals, the free-standing mullions and tracery over the face of the wall above, and the tall open gallery in front of the openings in the second stories of the towers are among these features. Considered, however, independently of its relationship to the main body of the building, it has substantial merits, and is an imposing composition, though it lacks the qualities of the purest Gothic fronts.

East ends in the developed German pointed design appear to follow French models, often pretty closely, in their external as in their internal forms—as in St. Elizabeth of Marburg, Freiburg, and Cologne. The forms of earlier apses have been already sufficiently explained in treating of those of Magdeburg, Limburg, and Heisterbach. The exterior, like the interior, of the apse of Marburg is perfectly Gothic, and is a very close reproduction of that of the Liebfrauenkirche of Trier.

German transept ends are in some cases of apsidal form, as in St. Elizabeth of Marburg,—where the main apse is exactly reproduced in both arms,—but they are more usually rectangular, as in France. Neither the east end nor the transept in Germany exhibits any peculiar structural features that need be further considered.

The characteristic German spire was of very late development. Spires of stone appear to have been rarely constructed in the earlier period of pointed design. In the wooden spires of the earlier monuments, the adjustment to the square tower is not generally well managed. But the early German tower is often octagonal—as the eastern towers of Gelnhausen. In such cases the octagonal spire would naturally adjust itself

<sup>1</sup> This upper story of the façade is, however, I believe, an alteration of the original design.

to its foundation without the help of auxiliary features. But the German genius was always fertile in the production of picturesque effects in architecture, and it has seemed to take pleasure in going out of the path of straightforward design, and simple construction, in order to secure picturesque variety. Many instances of this occur in the adjustment of the tower roof to the tower in the Romanesque churches. Where, for instance, the tower is square and it would be natural to cover it with a roof in the form of a square pyramid set even with the walls, the German architect has preferred to set his pyramid diagonally—placing stone gables over the sides of the tower which thus intersect the roof. The towers of Limburg are roofed in this manner. A similar treatment is applied to the octagonal towers of Gelnhausen. Here instead of setting the spire so that its sides would be even with the tower walls, the architect has set them obliquely—bringing their angles over the centres of these walls. The walls are then surmounted with gables, forming dormers to the base of the spire, and the resulting composition has a good effect. The spires of Gelnhausen are, however, not of stone; they are of timber covered with slating or tiles. In one of them an odd form is produced by shaping it on a spiral axis.

In cases where the octagonal spires are set on square towers, the adjustment is generally awkward. The passage from the square to the octagon is too abrupt, and when a vertical octagonal drum is interposed as a base for the spire, this drum often has a diameter smaller than that of the tower on which it rests. The spires of the Lorenzkirche above mentioned are thus connected with their towers. It seems to have been the intention to construct these spires of stone, and the base of the northern one appears to be so constructed up as high as the apexes of the gables which crown each face of the drum.<sup>1</sup> Some octagonal spires in Germany are set evenly on octagonal towers—as at Heiligenstadt, but such towers and spires have little Gothic character; the tower is a vertical storied edifice having no Gothic organism. The spires of St. Elizabeth of Marburg have some of the principal features of Gothic spires, but they are not of good form, and are adjusted in a strangely awkward manner. On the square buttressed tower (Fig. 132) a steep-sided octago-

nal pyramid is set obliquely. This pyramid is truncated at a level above its base about equal to the width of the tower, and its sides are surrounded by a parapet. From this level the spire, whose base is smaller than the area of the substructure,

rises without any auxiliary features. A strongly marked horizontal line thus breaks the continuity of the upward converging lines. The junction of the lower octagon with the tower is better managed by the placing of a pinnacle on each angle of the tower over the buttresses, and by a steep gabled dormer over each tower wall. But there is little here of that organic adjustment of beautifully designed and finely proportioned features — each having, to the eye at least, a functional office — which distinguishes French spires like those of Chartres and Senlis. But the typical spire of the German pointed style is of a different character from all those thus far noticed. It is a purely ornamental feature of open stonework, and is not at all the roof of the tower, as true Gothic spires invariably are. The spire of the west front of Freiburg is a characteristic example. The single square tower, which in this case terminates the nave, rises with solid buttressed walls to the apex of the timber roof over the vaulting. It carries an enormous vertical octagon of open stonework, which has a height nearly equal to that of the tower itself, and from this rises the skeleton spire richly ornamented with tracery and crockets. On the

FIG. 132. — Marburg.

tower angles, against the oblique sides of the vertical octagon, are set solid vertical abutments which, at about a third of the height of the octagon, are broken up into open canopies with spiky pinnacles arranged in three successive tiers, diminishing in numbers as they ascend — their extremities falling within the

general sloping outline of the whole design. The vertical octagon is divided into three stories of arched openings, of which the uppermost is the tallest, and has a single arch over slender mullions and tracery surmounted by a steep crocketed gable which rises through the horizontal cornice. Pronounced horizontal lines are thus avoided, and the eye is led continuously upward.

## CHAPTER VIII

### POINTED CONSTRUCTION IN ITALY

DURING the twelfth century Gothic architecture had no influence on the native art of Italy. The direct inheritance of classic traditions, and the natural predilection for classic forms, had, for the most part, maintained, without essential change, an architectural system which differed, in no fundamental particulars, from that of the Christian Roman basilica.<sup>1</sup> But at the close of the twelfth century the monks of the Cistercian order, who had by this time settled in various parts of the peninsula, began, in more or less secluded localities, to erect churches in which the pointed architecture of Burgundy, the original home of the Cistercians, was often closely reproduced. The evidence is strong that this Cistercian architecture on Italian soil had ultimately a large share in giving rise to that peculiar type of pointed building which is known as Italian Gothic.<sup>2</sup> But how far this style of building is in reality Gothic, we shall presently see.

The pointed architecture of Burgundy in the twelfth century was itself not strictly Gothic. The duchy of Burgundy did not come fully under the architectural influences that were active in the Ile-de-France. The early pointed architecture here differs, in fact, little in its structural character from the organic

<sup>1</sup> I believe that this statement needs no qualification. The strong Byzantine influences of the early Middle Ages did not, in general, fundamentally modify Italian architectural forms, though they introduced some new features; and the Lombard Romanesque of the eleventh century, while essentially different from the basilican system, was not a native Italian development, and was never generally adopted. In Italian architecture, as such, the basilican forms remained dominant until the close of the twelfth century; and these forms were, in fact, never wholly superseded in Italian design.

<sup>2</sup> Cf. *Origines Françaises de l'Architecture Gothique en Italie*, by C. Enlart, Paris: Thoin et Fils, 1894, in which a full and accurate account of the Cistercian architecture of Italy, and its relationship to that of Burgundy, on the one hand, and to the subsequent Italian pointed style on the other, will be found.

Romanesque of the same region. The Abbey Church of Pontigny may be taken as a fair example. The nave and aisles of this building are in all essential respects like those of the Romanesque nave of Vézelay, except that the arches are pointed, and that groin ribs are used in the high vaulting, which has something of the Gothic form, resulting from the stiling of the longitudinal rib; the aisle vaults have no groin ribs. In some points the system is even less advanced than that of Vézelay. For in Vézelay the piers are compact, and their vaulting members, which correspond in number with the vault ribs, all rise from the pavement. But in Pontigny the pier is of great width,<sup>1</sup> the pilaster strip is correspondingly wide, and the engaged vaulting shaft, with its pilaster, carries all the ribs of the vaulting. The vaulting shaft, moreover, does not rise from the pavement, but rests on a corbel at a considerable height above it. The nave was not originally provided with flying buttresses, though such buttresses were included in the system of the choir and apse.<sup>2</sup> Notwithstanding that it was built late in the twelfth century, the Church of Pontigny is a heavily walled edifice with small openings, and having no complete Gothic skeleton.

Other pointed Burgundian buildings of this epoch have even less Gothic character. The Church of Montreal near Avallon,<sup>3</sup> for instance, though vaulted on a full system of ribs, has no stiling of the longitudinal arch, and no winding vault surfaces, such as results from stiling. The external openings here, as in many other buildings of the period in Burgundy, retain the round arch, and the whole system has a Romanesque expression. This monument retains, in fact, at the close of the twelfth century, many of the characteristics of the transitional architecture of the Ile-de-France of the early part of that century.

Another type of Burgundian pointed architecture is characterized by sexpartite vaulting, with a corresponding alternate system of piers. The Church of Pont-sur-Yonne is of this class. Both of these types are, as pointed out by M. Enlart, more or

<sup>1</sup> Measuring 3.24 metres.

<sup>2</sup> The flying buttresses now existing on the north side of the nave are, I believe, of a date considerably later than that of the original construction of the building.

<sup>3</sup> Figured by M. C. Enlart in his *Origines Françaises de l'Architecture Gothique en Italie*, p. 249.

less fully reproduced in the Cistercian architecture of Italy — the first in churches like Fasanova, south of Rome (the earliest of the series of Cistercian churches in Italy), dating from 1187–1208, and San Galgano, near Siena, begun in 1218;

FIG. 133. — San Galgano.

and the second in the Church of San Martino, near Viterbo, dating from the commencement of the thirteenth century.<sup>1</sup>

The Church of San Galgano (Fig. 133), now in a state of ruin, may be taken for comparison with that of Pontigny to

<sup>1</sup> Cf. Enlart, *Origines*, etc., p. 237 *et seq.*

illustrate the unmistakable derivation of the Cistercian architecture here from the Burgundian source.<sup>1</sup> Our figure, showing a portion of one aisle and an oblique view across the nave, affords, owing to the ruined condition of the building, a complete illustration of the structure. It will be seen that the longitudinal rib of the high vaulting rises vertically for a considerable distance above the main impost, and enough of the vault itself remains to show the twisted surface, giving, as at Pontigny, the Gothic form. Also, as at Pontigny, we have a full system of ribs of which the transverse rib (of this rib, however, only one stone remains in place) is heavy, and of a single order of square section. The pier, too, is identical with the pier of Pontigny—having a pilaster strip from the pavement with a single engaged shaft resting on a corbel at a considerable height above the pavement. The exact similarity holds, also, in the ground-story archivolts and their supports, in the pointed openings of the clerestory, and with the insignificant exception of a small round-arched opening (which does not occur in Pontigny) in the triforium wall. It will be seen further that the clerestory buttresses are substantially the same, and that no flying buttresses are included in the system—the great breadth and thickness of the wall, reinforced by the vigorous pier but-

<sup>1</sup> The eminent Italian architect, Sig. Canestrelli, in a recently published monograph (*L'Abbazia di San Galgano*, Florence: Alinari Brothers, 1896) discusses (p. 79 *et seq.*) the relationship of the Cistercian buildings of Italy to the architecture of the twelfth century in Burgundy and says: "Lo stile usato dai Cistercensi in Italia nella costruzione della maggior parte dei loro templi è uno stile di transizione, che, ispirato agli elementi fondamentali dell'architettura lombarda, palesa poi in certe disposizioni iconografiche, in alcune forme statiche, ed in qualche dettaglio ornamentale, l'influenza della scuola architettonica della Borgogna. Ma per ragione di questa secondaria influenza, non crediamo possa dirsi che i Cistercensi introdussero in Italia l'architettura ogivale. I germi di questa, lo dicemmo, si palesano appunto in Italia in quella primitiva forma lombarda che il Nordini acutamente chiamò *proto-ogivale*: nè quella stessa influenza borgognona a cui abbiamo accennato, può considerarsi di origine e di carattere schiettamente francese, poichè antiche e frequenti furono le relazioni artistiche fra la Lombardia e la Borgogna, cuna dell'Ordine Cistercense."

It is true, as we have already seen (p. 44), that the organic Romanesque of Burgundy owes its fundamental elements to the Lombard Romanesque. But the pointed architecture of Burgundy has some features, derived from the early Gothic of the Ile-de-France, which did not exist in any Lombard monuments. It is this Burgundian architecture of a partially Gothic character, and not the Lombard Romanesque, that was reproduced in Italy by the Cistercian monks. The germs of Gothic arose, indeed, as Sig. Canestrelli truly says, in the primitive Lombard architecture; but these germs were never developed in Italy.



tresses, rendering them unnecessary. In the aisle vaulting alone do we find a material departure from, and an improvement on, Pontigny — here, equally with the nave, a full set of ribs occurs.

We have, then, in the nave of San Galgano a Burgundian pointed (not a perfectly Gothic) building on Italian soil. But, just as in Pontigny, the vaulting has more Gothic character than most Burgundian pointed buildings, so in the vaulting of San Galgano we find the true Gothic form, which occurs in few, if any, other Cistercian buildings in Italy. In the Church of Fassanova, for instance, which is in other respects almost exactly like Pontigny and San Galgano in its structural system, the vaulting has nothing of the Gothic shape; and it has no groin ribs in either nave or aisles.

Precisely at what time the Italian builders themselves began to use the pointed arch and to give form to the distinctively Italian pointed architecture, it is difficult to ascertain. Among the pointed churches of the first half of the thirteenth century are some which are not exclusively Cistercian. Towards the middle of this century the Dominicans and Franciscans began to take an active part in architectural works; and in the churches built by them, as well as in others of the time, various foreign influences are manifest in tangled confusion. It is therefore not easy to make out where the elements that may properly be called native begin to take form.

Among the buildings which are for the most part neither purely Burgundian nor yet what we recognize as distinctly Italian are the Church of St. Andrea of Vercelli and that of St. Francis of Assisi. Mr. Fergusson affirms<sup>1</sup> that St. Andrea of Vercelli was designed by an English architect, while M. Enlart supposes<sup>2</sup> that its architect may have been a Frenchman from the north of France. The structural system of the monument affords, indeed, no support to the belief that its designer was an Englishman; and while it has many features that indicate an influence from the north of France, it fails to exhibit a perfectly Gothic character. The vaulting of the nave has, indeed, somewhat of the true Gothic form, and the slender vaulting shafts rising from the pavement are enough

<sup>1</sup> *History of Architecture in all Countries*, vol. ii. p. 324.

<sup>2</sup> *Origines*, etc., p. 183.

like Gothic shafts to be the work of a French architect. The composition of the ground-story pier has likewise a substantially Gothic character, though it is of an unusual form, consisting of a large, round column surrounded by slender shafts resembling the piers of Bourges. The vaulting of the choir and transept is different; it has no stilting of the longitudinal rib, and hence no perfectly Gothic shape. The mode of enclosure is throughout far from Gothic. The heavy walls are wholly unbroken above the ground-story arcade save by a small round-arched opening in the clerestory of each bay. The profiling is a mixture of Lombard or Burgundian, and true Gothic elements. The ground-story archivolts are of the first type, while the vault ribs, capitals, and bases are of the second. Thus in its general structural character, St. Andrea of Vercelli conforms in part with the Cistercian buildings of the type of San Galgano and Fasanova, while in some of its features it follows the early Gothic of the Ile-de-France. In its internal system it exhibits nothing that can be called distinctly Italian.

The Church of St. Francis of Assisi has a different character, though with some points of likeness in its details. Vasari affirms<sup>1</sup> that it was designed by a German architect. M. Ramée, on the other hand, calls it a French monument and says:<sup>2</sup> "Elle est dans le style ogival pur de France," adding that it cannot be of German origin since the pointed architecture of Germany was, at the time, too undeveloped to have furnished the model. M. Ramée is, however, much mistaken in supposing that St. Francis of Assisi is a building in the pure Gothic style. Structurally it has little Gothic character. But the vaulting is like much of the Cistercian vaulting, and Cistercian vaulting of the same kind existed in Germany as well as in Italy in the early part of the thirteenth century. Vasari's statement is, therefore, hardly disproved by such considerations as M. Ramée and a few other recent writers have advanced. However this may be, the building itself is of a mixed character, and it includes some features which must, it would seem, have been derived directly from the Ile-de-France. The most important of these features is the vaulting of the apse. In plan this apse is a

<sup>1</sup> *Lives*, etc., London, 1876, vol. i. pp. 51-53.

<sup>2</sup> *Hist. Générale de l'Architecture*, vol. ii. p. 1121.

polygon of five sides; the crowns of the arches over these sides reach high up into the vaulting, and the vault surfaces are vertical for a considerable distance above the springing of the radial ribs. The form is thus perfectly that of Gothic apsidal vaulting; and while it is possible that it might have been designed by a German architect, since vaulting of this nature had somewhat before this time been built in Germany, — as in the *Liebfrauenkirche* of Trier, — it seems unlikely that this vault was derived from a German source, as most of the details connected with it, the capitals and bases especially, are of the pure French types. The work itself seems to indicate a direct influence from the *Ile-de-France*.

The nave, on the other hand, has no Gothic character, except so much as is given it by a full set of pointed ribs in the vaulting. The compartments of this vaulting are square, the ribs all spring from the same level, and the vaulting conoid is thus spread out to the utmost against the wall. The building has no aisles, and up to a few feet of the springing it is enclosed with an enormously heavy wall. Above this level the wall is thinner, and each bay is pierced with a narrow pointed opening. Hardly any feature of the design suggests a peculiarly native origin, though the plainly bevelled sections of the vault ribs foreshadow those that are common in the later Italian pointed monuments. Against the walls externally are vertical, half-round, tower-like buttresses, with heavy flying buttresses abutting at a low level, and spanning the lateral chapels of the lower church which is formed by a vaulted basement beneath the main edifice.

A very different scheme is embodied in the Church of St. Francis of Bologna, dating from 1236–1240. Here we have a nave covered with sexpartite vaulting, a form that is rare in Italy, though it occurs in a few other instances — as in the easternmost bay of St. Galgano and in the Cathedral of Piacenza. While not a Cistercian church, its internal bays, in their general forms and proportions, correspond to those of St. Galgano and Fasanova. The piers, however, are very different, the main piers of the first double bay adjoining the transept having, on the ground story, an octagonal core with a plain engaged pilaster on each face, three of which rise to the springing and support the main ribs of the vaulting. The intermediate

pier is a plain octagon column, on the ground story, with a single pilaster rising from it to carry the intermediate transverse rib. Throughout the remaining bays, the ground-story piers are uniformly like the intermediate piers of the first bay, with a single pilaster support for the vaulting in the main and intermediate piers alike. The vaulting has transverse and diagonal ribs, very small longitudinal ribs,<sup>1</sup> and slightly winding surfaces in the main vaulting conoids.

St. Francis of Bologna has a polygonal apse of seven sides with an apsidal aisle and radial chapels. Its plan is thus essentially Gothic and unlike what is common in Italy. This apse has a vault of Gothic form and, what is remarkable, its thrusts are met by a system of flying buttresses, each consisting of a single arch carried high over the aisle roof, precisely as in the early French Gothic apses. The vaulting of the nave has similar flying buttresses alternating with the solid wall buttresses built over the aisle, such as are common in Italy. Thus in general form and construction this edifice has a good deal of Gothic character, which seems to indicate a strong French influence; and it is, I believe, without a parallel elsewhere in Italy.

In each of the foregoing buildings the evidence of direct foreign influence, in the whole or in parts, is apparent. What may be called the distinctively Italian type of pointed architecture, without features that appear to have been directly imported, occurs first, perhaps, in the Dominican Church of Sta. Maria Novella in Florence, which was founded in 1278. This church has a nave and aisles, a transept in the extreme east end without aisles, and a short rectangular choir. It is vaulted throughout, and the whole interior is of admirably worked stone. The characteristics of the Cistercian pointed art, as exhibited in San Galgano, are here considerably modified, but not in a way that renders the building any more like true Gothic. The vaulting is mostly in square compartments, which, since the system is of the uniform type, produces oblong vaults in the aisles. The vault forms of San Galgano are thus, in plan, here reversed. The vault ribs, as we shall henceforth invariably find to be the

<sup>1</sup> These longitudinal ribs are shown in a drawing published by Sig. Rubbiani in a monograph by him entitled, *La Chiesa di S. Francesco in Bologna*, Bologna, 1886; but are invisible in the photograph reproduced by M. Enlart in his *Origines Françaises de l'Architecture Gothique en Italie*.

case in Italy, all spring from the same level, and the vaults themselves have consequently no true Gothic shape. The piers are composed of substantially the same members as the piers of San Galgano; but their proportions are much more slender. The most striking departure from Burgundian, as well as from Gothic, design is that of the enormous height given to the ground-story arcade. This peculiarity, which became characteristic of Italian pointed buildings, is brought about by the great width necessarily given to the bays of the nave by the use of the square form of vault in connection with a uniform system of supports. In the Burgundian pointed buildings, and in the Cistercian pointed architecture of Italy, the alternate arrangement of the Lombard Romanesque is generally followed; that is, an intermediate pier is inserted on the ground story between every pair of main piers when square vaults are placed over the nave — as in the Church of Pont-sur-Yonne in Burgundy, and in San Martino near Viterbo. By thus avoiding the wide spacing of the supports of the ground-story arcades, their excessive elevation is also avoided. But by the Italian architects of the thirteenth and fourteenth centuries the square vault without the intermediate pier was the arrangement generally adopted. A similar arrangement frequently occurs, it is true, in the early transitional architecture of the Ile-de-France — as in the nave of Bury (p. 67); but such French buildings are on a small scale, and the massiveness of their piers is so great that the spans, and consequent height, of the main arcades are not proportionally excessive. The Italians, in their largest pointed structures, evince a predilection for altitude in the main arches of their interiors. Here in Sta. Maria Novella (Fig. 134) the crowns of these arches reach even higher than the springing of the vaults. There is thus scarcely any triforium space; and the blank wall of the low clerestory is broken only by a small oculus placed far up near the crown of the arch of the vault.

No adequate buttress system is apparent on the outside of the building, and yet the vaults are not tied in by iron rods, as they frequently are in Italy. An examination of the structure over the vaulting of the aisles reveals, however, the existence of powerful abutments in the form of solid walls built upon the transverse ribs of the aisles, and reaching up to the rafters of the lean-to timber roofs. Similar walls are built over the haunches

of the transverse ribs of the high vaulting ; and deep pier buttresses against the clerestory walls, with others against the walls

FIG. 134. — Sta. Maria Novella.

of the ground story, complete the buttress system (Fig. 135). This certainly cannot be called Gothic construction ; though by it the stability of the vaulting is secured.

The main body of the Cathedral of Arezzo, dating from the latter part of the thirteenth century, so closely resembles Sta. Maria Novella in its structural form as to call for no extended notice. What may be called the Italian characteristics in pointed design prevail here equally. But the apse of

FIG. 135. — Section of Sta. Maria Novella.

Arezzo has features that are not Italian. Its plan is like that of the apse of St. Francis of Assisi, but its proportions are taller, and yet it has a less strictly Gothic form. The cells of the vault are much less developed and the vault as a whole retains more of the form of a gored semidome. The tall mullioned lancets

with tracery, which occupy three of the bays of this apse, are in themselves of thoroughly Gothic character; they do not, however, reach to the arches of the vaulting, and the large wall spaces above them betray the Italian, as opposed to the Gothic, habit of design.

Perhaps the next Italian pointed building of importance is the Franciscan Church of Sta. Croce at Florence, which is said to have been designed towards the close of the thirteenth century by the architect Arnolfo. It has a nave of great proportionate width with side aisles, a transept at the extreme east end with square eastern chapels, and a polygonal apse of five sides. The apse and chapels only are vaulted — all the rest of the structure being covered by open timber roofs. The main body of the church is thus in plan, and in general form, substantially the same as an early Christian Roman basilica. Many of the details of construction are, indeed, different from those of the Roman basilican churches, but these details do not essentially affect the general character of the monument. They consist chiefly in the wide spacing of the piers (now become general in Italian pointed design), giving the arches of the main arcade an excessive height, as we have just seen, and in the form of the aisle roofs, which consist of a series of gabled compartments set with their axes perpendicular to the axis of the nave. These roofs rest upon walls carried on transverse arches of stone, and as the rafters of each compartment are abutted by those of the one next adjoining, no trussing is required. The piers are simple and uniform octagonal columns of coursed masonry, like those of St. Francis of Bologna. The archivolts are of two orders of plain square section; and a shallow pilaster rises from the capital of each pier to the clerestory cornice. This pilaster has, of course, in an unvaulted nave, no structural use, but it gives some appearance of an organic system in a general view of the interior. A corbelled passageway is carried all round the interior at the triforium level, except at the transept, where it rises in a flight of steps to pass over the great arches of the transept, and returns at this level across the east end. The plain walls of the aisles and clerestory are pierced with a tall lancet, divided by a single mullion and simple tracery, in each bay. The only feature of a really Gothic nature in Sta. Croce is the vaulting of the apse. This is not



merely a ribbed semidome, or a celled vault of a primitive character; it is a true Gothic apsidal vault almost as distinctly developed as that of St. Francis of Assisi, and closely resembling it. This vault is carried, however, on corbels only; and the crowns of the tall lancet openings which occupy the three easternmost sides of the apse fall, as in the apse of Arezzo, far below the arches of the vault. Large spaces are thus left above them, which are here each pierced with an oculus.

Features derived from the Gothic are sometimes in Italy, as elsewhere, engrafted on buildings which had not originally any pointed elements. In the neighbouring Cathedral of Prato, a building of the Pisan Romanesque type, such features occur. The nave of Prato was covered in the fourteenth century with vaulting like that of Sta. Maria Novella in Florence. But this vaulting has no organic system of supports in the plain basilican Romanesque substructure. Some pointed openings were inserted at this period, among which are the portal of the west façade and the portal of the south arm of the transept—besides some other pointed openings in the east side, which is said to have been enlarged by Giovanni Pisano. The portal of the transept is a very beautiful example of the purest and most monumental type of the so-called Italian Gothic.

In the province of Venetia a type of pointed architecture occurs which is characterized by the use of the plain round column, instead of the compound pier, on the ground story. The use, at a comparatively late period, of this form of pier shows again how little feeling for the Gothic principles the Italians had. The Church of the Frari in Venice is of this type. Its vaulted nave and aisles are in other respects on the characteristic Italian model—with high arcades, blank and diminished triforium space, and a low clerestory. The Frari has, however, an apse with vaulting of true Gothic form. Another church of the same type is that of Sta. Anastasia of Verona. But the apse of Sta. Anastasia has a vault which is hardly more than a semidome, and heavily walled sides without Gothic openings.

The greater cathedrals of pointed design in Italy show, equally with the foregoing monuments, how little real Gothic spirit, and how little of any kind of structural logic, there was in the otherwise superior artistic genius of the Italians. Among

the more important of these the first in date is the Cathedral of Siena.<sup>1</sup> Though built under the superintendence of monks from the neighbouring monastery of San Galgano, and following the same general structural scheme, the design is not a close copy of the Church of San Galgano; and its variations from this model are in the direction of what is peculiar to Italian pointed architecture, though the pointed arch is not used structurally in its composition. It has domical groined vaulting in nearly square compartments, with round-arched ribs all springing from the same level, and piers which, while composed on the model of those of San Galgano, are more simple because the archivolts of the great arcade are of a single, instead of a double, order. There are no triforium openings, but a corbelled gallery passes along the wall at the triforium level. The openings of the clerestory and aisles are pointed, and are larger than is usual in Italian buildings. Siena has a dome at the crossing, a feature which is foreign to the principles of Gothic, and in no part of the edifice is the true Gothic system approached. We have in this building an emphatic illustration of the fact that the pointed arch had, in the minds of the Italian workmen, no connection with structural use. The architectural changes which were so interestingly brought about in the primitive Gothic of France by the structural use of this arch find no parallel in Italy. In the real Gothic, as we have seen, these changes take place first in the structural parts of the interior. But in the interior of Siena the pointed arch does not occur. The system exhibits no more advanced organic character than the naves of St. Ambrogio of Milan and San Michele of Pavia, which were built two hundred years before. In the external openings only (which in France were the last features to assume the Gothic form) does the pointed arch appear.

A still more striking instance of the lack of structural meaning in the Italian use of the pointed arch is afforded by the nave of Orvieto. Here we find no organic system at all. The blank clerestory walls are carried on round arches and cylindrical columns, and the whole is covered by a trussed timber roof only. The monument reproduces the forms of the

<sup>1</sup> For an account of the building of the Cathedral of Siena see the work of Professor C. E. Norton, *Church Building in the Middle Ages*. New York: 1880.

Christian Roman basilica with no essential modifications. But the windows are all pointed.

The building which is commonly regarded as the crowning monument of the Italian pointed style is the Cathedral of Florence. This building, as it now exists, is, however, an example of the later, and least meritorious, form of pointed architecture in Italy. Of the structure begun in the earlier style by the architect Arnolfo at the close of the thirteenth century, little remains. It is doubtful whether any part of his work was left after the remodelling to which the building was subjected in the fourteenth century.

In plan this building consists of a nave and aisles with apsidal projections north and south, forming a kind of eastern transept, an eastern apse, and a vast

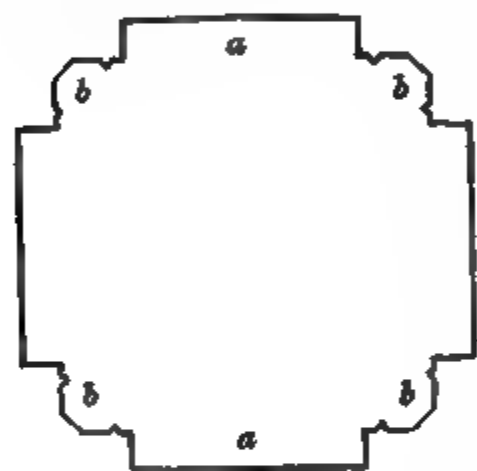


FIG. 136.

octagonal space enclosed by these several parts. The vaulting of the nave is in gigantic square compartments, while the compartments of the aisles are of narrow oblong shape. All of the vaulting ribs are pointed and spring from the same level, and the vaults themselves are much domed. The exaggerated height of the main arcades, already noticed as peculiar

to Italy, is here emphasized to the utmost. One of these enormous arches would embrace the whole nave of a church of no mean magnitude, and yet this vast structure, as often remarked, fails to impress the eye with a sense of its real size. Nor is this want of apparent largeness of scale made up for by any considerable beauty of proportions or by any peculiar structural interest. The system exhibits, on the other hand, some singularly meaningless and illogical features. The piers, for instance, have the section shown in Fig. 136, and the vault supports are continuous from the pavement; but, as may be seen in the elevation (Fig. 137), there are no capitals either at the springing of the great arches or at the springing of the vaults. The impost is marked in each case by a band of mouldings only. Lower down an ill-composed capital (which is little more than an ornamental band of leafage and mouldings following the section of the pier) is placed. The vaulting ribs

and vaulting shafts are merely the corresponding parts of the pier itself, which branch off at the imposts. This sameness of section, and sameness of magnitude, in both ribs and supports is a characteristic of the flamboyant Gothic of France (though the flamboyant profiling is different, of course), and it is a highly monotonous and uninteresting mode of design.

The Cathedral of Florence has no triforium; but the corbelled gallery, so frequent in the larger Italian churches, passes around the whole interior just below the springing of the vaults, and the low and blank clerestory is lighted with an oculus in each bay.

Notwithstanding the wide span of the vaulting, no external buttresses, other than the pilaster strips of less than usual thickness, occur in the system. The enormous side thrusts are met by the strength of the walls and by the usual Italian wall buttresses over the aisle vaults concealed beneath their timber roofs. In addition to this, however, it has been found necessary to insert iron tie-rods, — which disfigure the interior here as in many other Italian pointed buildings. The three apses have the structural character of Romanesque works, and the great dome, though a magnificent architectural design, is equally removed in form and constructive principle from Gothic art.<sup>1</sup>

FIG. 137. — Florence.

<sup>1</sup> The existing dome, as is well known, was no part of the original design, or even of the remodelled design of the fourteenth century. A dome of some kind, with domed apses, may, however, have been included in the scheme of the original architect. A fresco in the Spanish Chapel of Sta. Maria Novella contains an interesting representation of a church with a dome and apses which have been supposed to illustrate the original design of Arnolfo.

But this dome accords well with the other parts of the building, and the fact that it does so shows further how little Gothic character the building has. It would be impossible to make a dome harmonize with a building like Amiens Cathedral.

The equally gigantic, though never completed, Church of San Petronio of Bologna, begun in 1390, closely resembles, in its larger features, the Cathedral of Florence. The system is better in its details — having its capitals at the true impost levels, and the heavy corbelled gallery is omitted. The building is further noticeable on account of its buttresses — which are more effective than those of Florence, since they rise through the aisle roof and meet the vault thrusts above as well as below it. In other respects they are like those of Florence and other Italian buildings, and consist of solid walls built over the aisle arches in the primitive Lombard manner. It is curious thus to find the Italian builders at the close of the fourteenth century constructing buttresses after the manner of those of the Lombard Romanesque of the eleventh century; and it shows that the architectural system had not essentially changed in its structural principles.

Finally, in the nave of Lucca, also a work of the fourteenth century, we have an instructive illustration of the manner in which the real Italian architectural preferences frequently reasserted themselves before the period of the Classic Renaissance. The structural arches of this building are, as in Siena, of the round form, with exception of the longitudinal ribs of the high vaulting. Lucca is taller in its proportions than most of the other Italian churches, and the use of the round arch keeps the great arcade comparatively low; while the clerestory also being low, space is found for an open triforium of unusual height. This feature is almost unique among Italian buildings of the thirteenth and fourteenth centuries, and it gives a good deal of Gothic expression to this interior notwithstanding the prevalence of the round arch throughout the greater part of the design. The piers are formed like those of San Petronio of Bologna, with the addition of a third member in the vaulting system of supports to carry the longitudinal rib. The abutments are again of the usual Italian type — consisting of cross-walls over the aisles; but here, as in San Petronio, they break through the aisle roof. They do not, however, reach so high

against the clerestory wall; and the thrusts of the vaults are further secured by tie-rods.

Hardly anything more nearly approaching Gothic construction can be found among the monuments of Italy. Some other isolated Gothic features of a different character from those already noticed may, perhaps, occur, and may even be numerous. One instance worthy of notice occurs in the Church of Sta. Maria della Pieve in Arezzo — where on the west side of the crossing are compound piers that have a great deal of Gothic form, and are, I believe, almost without a parallel. They now carry pendentives for the support of a dome, but they were manifestly intended to support a ribbed groined vault. The rest of the structure is of a primitive basilican form, though the great arches are pointed, and the aisles of the choir are vaulted on ribs.

No consideration need be given to the peculiar pointed architecture of Southern Italy and Sicily, because the pointed arch as used in that architecture has no relation to vaulting save in a few exceptional instances, as in the apsidal vaulting of the Cathedral of Naples. The great churches of Palermo, Monreale, and Cefalu are basilican structures modified and embellished with elements derived from Byzantine and other Eastern sources, but without any Gothic features.

Having now considered the general structural system of the main body of the Italian pointed edifice, we may before examining the larger external features next glance at the characteristic forms of openings and their relationship to the structure itself. These openings are always mere windows and doorways in solid walls. They are naturally of small dimensions because the retention of Roman and Romanesque principles of construction renders comparatively unbroken walls necessary for the stability of the edifice; and also because the sunny climate makes large openings undesirable. In the clerestory the simple oculus is very common — as in Sta. Maria Novella and the Cathedral of Florence. A narrow pointed window is also frequently employed; but a window large enough for tracery is rare. The clerestory openings of Siena are exceptionally large, though they are still small as compared with the wall areas in which they are set. In other situations the openings may be larger. When large enough to admit of it, they are divided by one or

more mullions and with simple geometric tracery, or with pierced tympanums like those of the early French Gothic. It is curious, however, that the pierced tympanum does not usually occur in the early work in Italy, but is frequent in the later buildings—as in the chapels of the aisles of San Petronio of Bologna. It is sometimes very elaborate, with a multiplicity of openings enriched by cusps and featherings, and with its solid surfaces embossed with relief carvings—as in the unusually large openings of Or San Michele in Florence. These openings show the same curious propensity for mixing Romanesque and Gothic elements that we have found so often in the larger features of the Italian buildings. They are round arched, with subordinate arches and circles composing a simulated tracery wrought in relief on the solid tympanum surfaces—the pointed arch occurring only where it is produced by the intersection of round ones. Substantially the same treatment occurs in the tympanum of the great opening of the top story of the Florentine Campanile (though the main arch is pointed here), and in many other places. In some of the earlier Italian buildings we find, as before remarked (p. 271), true Gothic tracery of a simple type—as in the apse of the Cathedral of Arezzo.

Large wheel windows with tracery in west ends and transept ends are not often met with in Italy. A fine one of considerable size occurs in the west front of Fossanova, dating from the thirteenth century, and is thoroughly French in character. A still larger one, now without any dividing members, forms a part of the west front of Siena, and there is a smaller one with tracery in Orvieto. But such openings are rare on a large scale in Italian pointed buildings.<sup>1</sup>

The west fronts of Cistercian buildings in Italy, like their Burgundian prototypes, usually conform in outline with the buildings themselves—as in Fossanova and Casamari. The west front of St. Francis of Assisi follows the form of the simple interior which it encloses; but in that of St. Francis of Bologna we get an early instance of the independent treatment of the façade which became a marked characteristic of Italian

<sup>1</sup> A large wheel occurs in the west front of the basilican Romanesque church of San Zenone in Verona, and remarkable ones are found in the façades of Sta. Maria and San Pietro, of Toscanella. But it seems impossible that these should have been produced at the early periods to which these buildings are usually assigned.

work in the fourteenth century. In this composition the division of the interior into nave and aisles is truly marked by buttresses; but the outline of the roof is not followed—the walls of the lateral bays being carried up above the aisle roofs as mere screens which terminate in the sloping lines of the roof of the nave as if the building had no clerestory. A characteristic instance of later design in this part of the building is that of the west front of Siena. The true lines of the roof are entirely ignored in this design. They are in reality of low pitch; and the lean-to roofs of the aisles have their eaves on a level with the horizontal string-course which forms the cornice of the ground story of the façade. Hence the greater part of the ornamental arcades in the side bays over this string, together with the deep gables which surmount them, and a considerable part of the great central square compartment with its steep gable, are purely ornamental erections corresponding to nothing in the building itself. The west end of Orvieto and of Sta. Croce of Florence have a similar character. The raking cornices of the façade of the Frari in Venice follow the lines of the roofs; but the composition is spoiled by the meaningless ornamental additions built over them.

Perhaps the façade in which the most singular contradiction of the form of the building to which it is attached is found is that of the very small Church of Sta. Maria della Spina at Pisa. In this case the designers appear to have gone as far as possible out of their way to produce an incongruous front. The building has no internal divisions. It is a plain rectangular enclosure covered with a single-trussed timber roof of very low pitch. The architects have enclosed this simple structure with three steep gables arranged in the most childish manner. It is, in fact, an absolutely illogical arrangement. The lower part of the front is treated so as to suggest an interior of two aisles of equal width by the insertion of a central pier, and over each of the divisions thus formed they have placed a gable. Then, rising from between these, a third gable is set with its slanting sides intersecting those of the other two. The true line of the roof may be seen behind the false gables rising between their intersections. It is proper to say that this façade is not a design of one epoch, but it is made up of parts that were wrought at



different times from 1230 to 1304.<sup>1</sup> It is, however, a fair illustration of the Italian inaptness in pointed design.

The east ends of the Italian pointed churches have a variety of forms. In buildings of the thirteenth century the apse is sometimes, as we have seen in St. Francis of Assisi, of a polygonal plan and a more or less Gothic form, though it rarely has a completely Gothic structural system. It is almost invariably a heavy walled structure, though the general effect is in some cases lightened by the insertion of large openings with mullions and simple tracery. The apsidal aisle is very rare, and where it occurs, as in St. Francis of Bologna, the work points to a direct French influence. In some polygonal apses, even of a late epoch, as those of the Cathedral of Florence, the elevation consists of solid walls roofed with semidomes on ancient principles. The square east end is very common, as in most of the Cistercian churches—St. Andrea of Vercelli, Sta. Maria Novella, the Cathedral of Prato, and the Cathedral of Orvieto. In a few instances, as in St. Andrea of Vercelli, this square east end has pronounced angle buttresses with set-offs of more or less Gothic character; but more commonly, as in Sta. Maria Novella, the buttresses are nothing more than Romanesque pilaster strips.

Transept ends are almost invariably square with plain walls and pilaster strips, as in St. Francis of Bologna, Sta. Maria Novella, and the Cathedral of Siena.

The towers of the Italian pointed style do not differ materially in structural character from those of the Lombard Romanesque architecture from which they are mainly derived. They are rarely incorporated with the church itself, and never form parts of the western façade as do the towers of churches north of the Alps. At Prato the tower, a particularly fine one, rises through the wall of the south aisle close to the transept; but generally, as at Florence, it is placed at a short distance from the west façade. In form it is a plain storied edifice rising without set-offs to a considerable height, and covered with a low pyramidal roof of timber. In a few cases a steep pyramid of stone takes the place of the low timber roof, as in the tower of Sta. Maria Novella (Fig. 138), and that of the Badia of Flor-

<sup>1</sup> Cf. *Les Monuments de Pise*, p. 99. Par M. Georges Rohault de Fleury. Paris, 1886.

ence. The magnificent campanile of the Cathedral of Florence, though unique in richness and elegance, may be taken as a characteristic example of the general structural form. It has five stories, of finely proportioned heights, marked by string-courses, of somewhat Gothic profile, which pass around vertical buttresses of octagonal section placed at the angles and reaching from the ground to the coping. The basement story is a little larger on plan than the stories above it, and thus forms an apparent foundation without which so high a structure would appear insecurely based. The story next above, which is of considerably greater height and forms a secondary foundation, has two pilaster strips on each face between the angle buttresses. The upper three stories are proportioned in increasing heights, and are pierced on each side with beautifully designed pointed openings, each divided by a mullion and tracery and crowned with a crocketed gable of great elegance. On the third and fourth stories these openings are in pairs, while on the top story one opening of very large size, with two mullions and richer tracery, occupies each face. The whole monument is crowned with a deep and elaborate cornice carried on corbels, and is covered by a low pyramidal timber roof. A steep pyramid of stone, like that of Sta. Maria Novella, is supposed, however, to have been originally intended. The universal admiration which this tower has called forth is no more than just; but it will be readily seen that such a structure is different in character from a Gothic one — although, as we have seen, the tower necessarily embodies less of what is peculiar to Gothic construction than any other part of the Gothic monument.

FIG. 138. — Sta. Maria Novella.

The lack of a logical constructive sense among the Italians is especially marked in those square towers of Northern Italy

which are crowned by octagonal lanterns. Of these the tower of the Scaligeri at Verona (Fig. 139), and that of St. Andrea of Mantua, are conspicuous examples. In these designs no attempt is made to effect an adjustment of the two forms such as to make them appear like parts of one whole. On the contrary, the tower is crowned with a pronounced bracketed cornice, and the lantern rises abruptly from the square area, leaving large spaces at the angles wholly unoccupied. Anything like the

transitional features which in Gothic art give the sense of organic unity between the tower and its superstructure is hardly ever found in Italy. In a few instances, however, an attempt to produce a more satisfactory arrangement is made, as in the conical spire that crowns the square tower of primitive Lombard form which is incorporated with the Church of San Fermo Maggiore of Verona. But the diminutive cones, mounted on square bases, which are set on the angles of this tower, though they improve the otherwise bald composition, have little organic relationship to the spire. A comparison of this work with the old tower and spire of Chartres (Fig. 100, p. 186) will show the childishness of Italian art in the shaping and adjustment of such features. The true Gothic spire was never constructed in Italy. It is a feature that would not accord with the general character of the Italian pointed building.

FIG. 139. — Tower of the Scaligeri.

From what has already been said, it will be seen that the general external form of the Italian pointed church is substantially like that of the basilican Romanesque edifice. It has a simple outline, unbroken by features such as pertain to the Gothic of the North. The steep gables and pinnacles often added to the façades, as in Orvieto and Siena, have no logical meaning, since they correspond to nothing in the real form of the building. In some instances such features were, in childish imitation of the Gothic, added to other parts of the Italian

exterior — as in the gables and pinnacles set around the apse of S. Fermo of Verona, and along the sides of the Spina in Pisa. In S. Fermo the pinnacles do, indeed, crown a series of buttresses, and may therefore be regarded as having the same function that they have in a Gothic building; though with the heavy Italian construction they can hardly be needed. But in the Spina they are useless, since the church is not vaulted. These elaborate pinnacles set at intervals along its walls are therefore inappropriate. The broken outline and multiplied upright features of a Gothic cathedral like Reims or Amiens are the natural expression of the Gothic structural system. To associate such elements with buildings of the Italian type is to violate the principles of architectural design, and to produce incongruous effects.

The characteristics of the pointed architecture of Italy are fully enough set forth by the monuments already noticed. While there are many minor local variations of type, the same general absence of really Gothic modes of construction and of Gothic form prevails from one end of the country to the other. The only conspicuous exception is that of the Cathedral of Milan — a design of late German character which is but a travesty of Gothic. From the time of the building of St. Francis of Assisi to that of the building of San Petronio of Bologna, a period of nearly a century and a half had elapsed without bringing about any material departure from the structural principles of ancient times. Structural invention was not a gift of the Italian people, who were in other respects so richly endowed with artistic powers. After the fourteenth century the elements borrowed from the Gothic fell rapidly into disuse, and the Italians returned to modes of composition that were more congenial and more suitable to them.

## CHAPTER IX

### POINTED CONSTRUCTION IN SPAIN

No important native architecture appears to have existed in Spain during the early Middle Ages. Extensive Roman monuments had been erected there, as in Southern Gaul, in more ancient times, and the exotic Moorish art had, at a later period, reached a high degree of development in the southern portions of the peninsula; but in the Christian north no architectural works of consequence, subsequent to those of the Roman epoch, arose until late in the eleventh century, when a Romanesque art of great excellence, embodying features that are common in the contemporaneous monuments of those provinces of Gaul which lie nearest to the Pyrenees, took form. During the twelfth century a robust type of pointed architecture was introduced, the main characteristics of which resemble those of the same period in Burgundy and Aquitaine, associated with features derived from the Romanesque of Spain itself, and frequently including the dome on pendentives over the crossing which had been common, also, in the churches of Southern Gaul.

Among the most important, and among the earliest, Spanish pointed buildings of the twelfth century is the old Cathedral of Salamanca. The system of the nave of this church (Fig. 140) corresponds closely in its general form with contemporaneous Burgundian design; though it has a massiveness throughout that is extraordinary, and which exceeds even that of the most ponderous Lombard constructions. The vaulting is quadripartite in wide oblong compartments on transverse and diagonal ribs; but without longitudinal ribs. The ribs are pointed, and are of enormous strength,—the transverse ribs being of two orders of square section, while the diagonals are profiled with a roll moulding on each edge, and a gorge with lateral fillets on the soffit between them. The vault surfaces are, owing to the great massiveness of the ribs, comparatively small in area; but they

appear to have something of the Gothic shape. The masonry of this vaulting is, for the most part, like that of contemporane-

FIG. 140. — System of Salamanca.

ous French work — the courses running in the direction of the long and short axes respectively, and being roughly tapered

and more or less gore-shaped. But in some of the compartments the cupola form is given to some of the cells, with the courses arranged in concentric horizontal lines. It is curious that these two forms should thus occur, as they do, even in the same vault compartments. In the transept one whole compartment has the cupola form, with diagonal ribs of an earlier type. The pier supports rise from the pavement, and consist of a heavy pilaster strip with an engaged column, which together carry the double transverse rib, and a smaller shaft on each side to carry the diagonal ribs. This secondary shaft is generally wanting in the contemporaneous Burgundian architecture; and the whole vaulting group here strongly resembles those of the early Gothic of the Ile-de-France. The capitals, also, have much the character of the early French Gothic. The diagonal ribs are not well adjusted to their supports; they are too bulky to be gathered upon the capitals of the shafts, and these capitals are set square with the wall, and hence do not offer properly shaped beds for ribs of square section in the diagonal position. Corbels set diagonally are therefore interposed. The vaulting members are, in fact, so heavy as compared with the size of the supports as to suggest that they may not be parts of one original design. Yet they are in other respects logically related to each other, and they have the appearance of being contemporaneous work.

A noticeable peculiarity of the composition is the great relative height of the ground story, which crowds the triforium and clerestory into a comparatively narrow space. This is not, as in Italy, due to a wide spacing of the piers. The spacings from centre to centre are, indeed, considerable, but the great bulk of the piers is such as to narrow the spans of the arches so that there was no constructive necessity for the high level to which they reach. It is the great height of the ground-story pier itself that makes the arch so high. This high ground-story pier is of frequent occurrence in the subsequent pointed architecture of Spain. The apse is Romanesque of the type that was common in Southern Gaul, and is covered with a primitive semidome.

Salamanca has a dome at the crossing which is worthy of special consideration here. The dome as such is not, as we have already seen, a Gothic feature—or a feature which can

be developed in a Gothic direction; but this is not a common dome: it is a structure which approaches the nature of a Gothic vault. It is carried on pendentives supported by pointed arches like those of St. Front of Périgueux. It does not, however, like the domes of Périgueux, and like Byzantine domes in general, rest directly on the pendentives. A vertical structure is interposed, consisting of two stages of arcading with sixteen engaged columns embracing both stages. Moreover, the dome itself is not a simple hemispherical, or oval, shell of masonry; but, like the vertical supporting drum, it is an organized structure and is composed of a system of converging ribs springing from the engaged columns and dividing the vault into gore-shaped cells which are enclosed with arched courses of masonry somewhat in the manner of primitive Gothic apsidal vaulting. The outside covering (Fig. 141) is of a monumental character, and of curious form. It may be roughly described as an obtuse conoid with a curved outline having eight crocketed ribs rising from the base to the apex. The plan at the base appears to be almost circular, but the upper two-thirds of the elevation seem to become flat-sided between the ribs so as to give an octagonal section. The outlines, both of plan and elevation, have a good deal of irregularity, such as is common, and not unpleasing, in much mediæval work. The vertical substructure appears to be a polygon of sixteen sides, and is treated in a manner that produces at once an effective system of abutments, and a noble architectural design. From the four angles of the square of the crossing rise four round turrets engaged with the drum, and reaching in two stories to its cornice. These are covered with conical roofs of stone. On the centre of each side of the square is set a projecting bay of two stories, each having a round arch of two shafted orders. This is surmounted by a rectangular mass of wall with a diminutive blind arcade of three arches on its face, and over this is a gable. The eight remaining sides of the polygon have each a round-arched shafted opening, and in each of the reëntrant angles where the turrets join the drum is set a stout buttress column.

Now it is remarkable that this composition as a whole is a modified reproduction of those early Gothic spires which had been developed in the north of France soon after the middle of the twelfth century. The lantern of Salamanca has the same prin-



cipal features, arranged in the same manner, that compose the old spire of the Cathedral of Chartres; the principal modification made by the architect of the Spanish design being the shortening of the proportions of all the parts that rise above the cornice of the drum to adapt them to the form of a domical structure on a large base. The drum itself answers to the vertical octagon (Fig. 100, p. 186) on which the spire of Chartres

FIG. 141. — Lantern of Salamanca.

is set, the turrets correspond to the corner pinnacles, and the gabled bays to the same features, in the French design. The greater richness of ornamental details in the Spanish lantern would seem to indicate a later date than the twelfth century. Crockets on spires were hardly used in France before the thirteenth century, and it does not seem likely that such details could have been introduced in Spain at an earlier time; for

there is no evidence of the existence of an independent and progressive school of designers in Spain during the Middle Ages. The round arches which prevail throughout the composition show a conservative spirit, since the pointed form is used exclusively in the structural arches of the building which this lantern crowns. It is very possible that the lantern was begun in the twelfth century and finished in the thirteenth after crockets had come into use in the Gothic of France.

The nave of San Vincent of Avila has pointed vaulting on transverse and diagonal ribs, which resembles the vaulting of Salamanca. The same excessive heaviness of construction is noticeable here except in the transverse ribs — which are of a single order, and are no larger than the diagonals. The diagonals themselves are, however, more massive than those of Salamanca, so that the whole rib system has an unusually ponderous effect. The vertical system of San Vincent dates from the early part of the twelfth century, and is Burgundian Romanesque in character. Its piers are composed like those of Vézelay, having a vigorous pilaster with an engaged shaft rising from the pavement. The adjustment of the lateral capitals to the diagonal ribs (Fig. 142) is happily managed in an unusual way by shaping their bells so that while fitting the square section of the pilaster their abaci are set diagonally. These capitals may be contemporaneous with the vaulting, which probably dates from the latter part of the twelfth century. The vault thrusts are met by strong pilaster buttresses which rise through the triforium against the heavy clerestory wall.

FIG. 142.

A different type of early pointed design in Spain is afforded by the Church of Santa Maria de Irache near Estella, in the province of Navarre. The vaulting here has pointed

transverse and diagonal ribs. The transverse ribs are very wide and are of a single order of plain square section, while the diagonal ribs are lighter and spring from a little lower level. As in the buildings before mentioned, there are no longitudinal ribs. The pier supports rise from the pavement and consist of coupled round shafts against a pilaster for the transverse rib, and a smaller shaft for each of the diagonals. The supports are well adjusted to the ribs of the vaulting—the capitals of the lateral shafts being set obliquely in conformity with the direction of the diagonals, and the abaci fitting well their respective loads. There are no triforium openings, and the clerestory has a blank wall space wholly embraced by the longitudinal arch of the vault. The ground-story archivolts are of one order without any profiling, and, like the transverse ribs, they are carried by coupled shafts against a pilaster. These coupled shafts are of frequent occurrence in the architecture of Southern and Central Gaul, the regions which, as we have seen, seem to have furnished the principal models to Spain in the Middle Ages.<sup>1</sup> While the nave of Santa Maria de Irache has thus a primitive pointed organic system, it has not the least organic character externally. The clerestory wall is entirely unbroken by functional members. The apse of this church, like those of Salamanca and San Vincent, is of a primitive Romanesque type with a heavy wall and a plain semidome. It is clearly of earlier date than the internal system of the nave; and it may be that the apses of all these early pointed buildings are considerably older than the naves to which they are now attached.

The cathedrals of Lérida, Tudela, and Tarragona, and the Abbey Church of Veruela, are nearly contemporaneous with the foregoing buildings. They have, also, substantially the same structural character—with pointed ribbed vaulting and massive piers functionally adjusted to the vaults. Coupled vaulting shafts, like those of Santa Maria de Irache, occur in all of them, the walls are heavy, the vault thrusts are met by pier buttresses only, and the external openings are generally round arched. Two of these buildings, Tudela and Veruela, have, however, features that are unusual in the early pointed

<sup>1</sup> Coupled vaulting shafts occur as far north as Poitou—as in the nave of Fontevault; and they are not uncommon in early Norman churches—as in the extremities of the Abbaye-aux-Dames at Caen, and the nave of Gournay near Beauvais.

buildings of Spain; namely, apsidal vaults which have the primitive Gothic form.<sup>1</sup> In Tudela the apsidal wall is of the plainest Romanesque form, but it has four engaged vaulting shafts from which as many ribs spring and converge on the crown of the easternmost transverse arch. On these ribs the vault cells are turned in the Gothic manner. There are no wall ribs, however, but the end arches are stilted against the wall, and their crowns reach to nearly two-thirds of the vertical height of the vault. No openings occur in the upper wall, and the general effect, except in the vault itself, is necessarily very different from that even of the most primitive French Gothic apse.

The apse of Veruela has an aisle with a pointed arcade and compound piers with vaulting shafts that rise from the pavement. The vault itself is like that of Tudela, but the wall above the arcade is of the most ponderous character, with no openings in the upper part of the clerestory. A very small, but widely splayed, round-arched opening is set, however, in each bay about midway between the ground-story arches and the arches of the vault. Apsidal vaults of so much Gothic character as these appear to be rare at this time. It is noticeable that the early organic pointed systems of Spain are not generally carried out in the apses; and, so far as I know, they are never any more fully carried out than in these cases.

The nave of the Church of Las Huelgas of Burgos, which was begun in 1180, has a less organic internal system. It has regular quadripartite vaulting on a full set of ribs, but with no appreciable stilting or narrowing of the vaulting conoid against the pier. The surfaces are slightly domical, though the masonry of the lateral cells is nearly horizontal and in almost parallel courses. Single vaulting shafts, rising from the ground-story imposts, carry the heavy transverse ribs. The longitudinal ribs and the diagonals interpenetrate and rest on a corbel placed just above the vaulting capitals. The great archivolts are of two orders, of which the lower one has a plain square section, while the other is simply moulded with a roll and a gorge. No triforium has place in the scheme, and the clerestory is heavily walled in, and has a narrow, round-headed opening. Outside the clerestory has

<sup>1</sup> I gather the above account of Lérida, Tudela, Tarragona, and Veruela from Street's *Gothic Architecture in Spain*. London, 1869.

a plain wall, with pier buttresses which terminate far below the cornice.

It will be seen that buildings like the foregoing, while having some of the features of the transitional Gothic, are in reality little removed in character from Romanesque works. They do not exhibit the signs of a growing organic development. We do not find in them those experimental innovations and those awkward adjustments which betoken an original creative spirit. The earliest pointed and ribbed vaulting in Spain is executed with a sureness of knowledge and a degree of mechanical skill which seem to show that the builders had been instructed and were working under the guidance of well-known models. Evidences of original, artistic, and inventive capacity are not, indeed, wanting; but this does not act independently in the Gothic direction. It is chiefly manifest in effective architectural composition of a kind which does not involve any fundamental structural novelty of design. The nearest approach to such novelty, so far as I know, occurs in the lantern of Salamanca. But even here the designer does no more structurally than to adapt members and adjustments, which had been invented elsewhere, to a new situation. This lantern, as we have seen, is composed after the manner of an early French spire, and its vault is merely in some measure like two primitive Gothic apses set together and placed over the crossing.

Not only do we not find the pointed art of Spain quick with progressive life, but side by side with more advanced modes of design the older ones survive. Contemporaneously with such naves as those of Salamanca and Santa Maria de Irache, the Church of N. Sra. de la Sierra of Segovia, now in ruin, was built. In this church, though the pointed arch was used throughout the interior, both nave and aisles were covered with barrel vaults strengthened by pointed transverse ribs. And the barrel vault occurs in some parts of buildings which are, for the most part, roofed with pointed groined vaults on ribs, as in the transept of Tarragona.<sup>1</sup> It thus

<sup>1</sup> Respecting this backwardness of pointed architecture in Spain, Mr. Street (*Gothic Architecture in Spain*, p. 354) remarks, referring to Lérida Cathedral: "The strange thing is that in a church which was building between 1203 and 1278 we should find such strong evidences of knowledge of nothing but twelfth-century

appears that the early pointed architecture of Spain was not largely of local growth, but that it was almost wholly the result of influences derived from various parts of Gaul. And such influences may be easily accounted for by the generally close relations which existed between the two countries during the Middle Ages, and by the early incoming of the Cistercian and Cluniac monastic orders, bringing with them, as they did into other countries, the architectural traditions of their original homes.

Nothing different appears in the Christian architecture of Spain until about the second quarter of the thirteenth century, when the fully developed Gothic art of France was reproduced in the great cathedrals of Burgos, Toledo, and Leon. The sudden appearance of such buildings can be explained only on the supposition that they were directly copied from the contemporaneous Gothic cathedrals of France, with more or less assistance from French architects and French workmen.

The Cathedral of Burgos was begun in the year 1221, one year later than Amiens. The vaulting of the apse and choir is altogether Gothic. The crowns of the arches of the clerestory openings reach far up into the vault, and these arches are of two orders, of which the uppermost forms the end rib of the vault. The longitudinal ribs of the choir vaulting are stilted to a great height—so that this essential feature of the Gothic system is fully developed. A longitudinal ridge rib is, however, included in the framework of the vaulting, and a few other minor departures from pure Gothic construction and Gothic forms occur in the system. The vaulting shafts rise grandly from the pavement, and are, in each pier, engaged with a large, though not ill-proportioned, round column. These shafts are not, however, so closely grouped as the best Gothic form demands, and there is some awkwardness in the adjustment of the diagonal rib and the shaft of the longitudinal rib together on the capital of the single lateral vaulting shaft. This part of the system is more logically arranged at Amiens, where there are five vaulting shafts compactly grouped. The composition of the pier of Burgos is logical on the ground story, but it is not

art; . . . it affords good evidence of the slow progress in this part of Spain of the developments which had at this time produced so great a change in the north of Europe."

so artistically effective as are the finest French models; for the great central columns are without capitals, and are merely banded by the mouldings of the abaci of the capitals which crown the shorter shafts of the great archivolts and of the aisle vaulting, and by a wider sculptured band reaching down to the necking of these smaller capitals. Hence the great compound capitals of the ground-story impost, which are such striking and beautiful features of the French naves, are wanting here.

The clerestory openings of the straight sides of the choir are small for a developed Gothic building, leaving some wall space on either side and above the clerestory string, but the triforium is largely developed and peculiar in design. It consists of an arcade of five small arches spanned by a great arch, with a tympanum which is pierced with five trefoiled circles. The whole design somewhat resembles the triforium of Bourges, and before it was disfigured by the flamboyant parapet and the ornamental additions to the shafts, which now mask much of its beauty, it must have been a stately and charming composition. The apse is unfortunately masked, below the level of the clerestory, by an incongruous retablo of late and inelegant Renaissance design.

The external system corresponds to that of the interior. Flying buttresses of good Gothic form (Fig. 143) rise over the aisle roofs; but the heads of their arches abut against the unbroken clerestory wall. The buttress system is thus lacking in one important member, namely, the pier buttress.

The Cathedral of Toledo, designed on a grand scale with double aisles throughout, including the apse, is for the most part thoroughly Gothic also. The choir is unusually short, having only one rectangular bay, and the apse, in common with the apses of Burgos and Leon, has only five sides. This choir, also, is so encumbered with an enormous retablo, and with screens and *grilles*, that the general system cannot be seen as a whole. The vaulting of the rectangular bay must have been remodelled some time after the middle of the thirteenth century. It has a different character from the vaulting of the nave and transepts, and from that of its own aisles. It is like English pointed vaulting, with *liernes* and *tiercerons*, and without any stiling of the longitudinal rib. But the system of the nave is

quite Gothic. Only the necessary ribs occur in its vaulting, the longitudinal rib is stilted, and the vault surfaces have the Gothic form perfectly developed. The transverse ribs are heavier than in French vaulting — a peculiarity of construction in Spain that

FIG. 143. — Burgos.

we have already noticed in the earlier pointed buildings of the country. The piers are composed like those of the choir of Burgos, with the improvement of an added shaft on each side of the ground-story portions, for the support of the first order



of the double archivolts of the great arcade. The vaulting capitals have square abaci (they are round in Burgos) and are set in conformity with the directions of their respective ribs. The introduction of the second archivolt shaft gives the ground-story impost a better form than it has in Burgos. The main aisles, like those of Bourges and Beauvais, are of great height, and thus the space usually occupied by the triforium and clerestory is diminished. No triforium occurs here, however, and the clerestory opening is brought down to what, in a French building, would be the triforium string. This opening is very large, and yet it does not wholly fill the space between the piers—a considerable strip of wall running up on either side which reaches to the crown of the arch. The double buttress system, required on account of the double aisles, is of true Gothic form, and it includes well-developed pier buttresses.

The system of the nave of Leon differs from the systems of Burgos and Toledo in being much lighter throughout. In this respect it is in marked contrast with nearly all other Gothic buildings on Spanish soil. The general scheme resembles that of Amiens. The vaulting has no unnecessary ribs, its longitudinal arches are stilted, and the Gothic twist is pronounced. The supporting shafts are slender, are compactly grouped, and the three principal ones rise from the pavement, while those of the longitudinal ribs are brought down to the ground-story impost. The nave of Leon has single aisles, which are lower in proportion than those of Amiens. The ground-story pier is consequently short, and its core is a massive round column as in Toledo and Burgos. The triforium and clerestory are thus afforded ample height; but, as in Amiens, the greater part of this height is taken by the clerestory, the opening of which appears originally to have filled the whole space between the piers, and its archivolt is both archivolt and longitudinal vault rib. The design follows Amiens further in having the clerestory mullions brought down through the triforium; and the triforium itself is composed as at Amiens. The spaces between the piers and the mullions nearest to them have been walled up at some period subsequent to that of the original construction in order to strengthen the system.<sup>1</sup> The buttress system has every

<sup>1</sup> The above account of the system of the nave of Leon is drawn from an illustration given by Street, *Gothic Architecture in Spain*, p. 113.

Gothic feature,<sup>1</sup> and the monument as a whole exhibits fewer structural departures from the best French models than either Burgos or Toledo. The apse is an almost exact reproduction of the apse of Reims, which is exceptional among the larger French cathedrals in having only five (instead of seven) sides, except that the abutments over the dividing walls of the radial chapels are not flying buttresses, but are solid walls each pierced with a narrow pointed arched opening.

The later pointed buildings of Spain depart in fundamental points from Gothic form. The changes introduced do not, however, seem to be expressive of any peculiarly Spanish artistic tendencies; they are manifestly, as before, the result of imitation. But whereas the earlier pointed art of the country followed French models almost exclusively, these later ones have features that appear to have been derived from various other sources. I have already spoken of the partial likeness to English vaulting of that of the choir of Toledo (which on this account would appear to be of a later epoch than the rest of the building). The vaulting of the nave of the Cathedral of Sevilla affords another instance of such a likeness. There is no stiling of the longitudinal rib, a longitudinal ridge rib is inserted, and the clerestory is extensively walled in.

But a more complete imitation of later English work occurs in the vaulting of the nave of the new Cathedral of Salamanca, dating from the early part of the sixteenth century. This vaulting has three *tiercerons* added to the rib system, which, together with the other ribs, are adjusted in the manner that is peculiar to English fan vaulting — so that the vaulting conoid has an approximately semicircular section. Other ornamental ribs, tracing fanciful patterns on the surfaces of the vaults, are also included. A feature derived from another source also appears in these later buildings of Sevilla and Salamanca, namely, a parapeted gallery in the clerestory, as in the Church of Sta. Croce and the Cathedral of Florence.

The modes of enclosure in the developed Gothic of Spain follow the French models less completely than the larger structural features. In the apse of Burgos, as we have seen, the

<sup>1</sup> The buttress system of the apse has every Gothic feature, including the pier buttress, but I am unable to make out clearly, from such photographs as I have been able to obtain, whether the pier buttress is included in the system of the nave.

clerestory opening has archivolts of two orders, the upper one of which forms the end rib of the vault, and the opening, with its shafted jambs, fills the whole space between the piers: but in the straight sides of the choir there is considerable wall on either side of the opening. These openings are each divided by a mullion which branches into the simplest form of geometric tracery. In Toledo there is no triforium. The outside roofs of the aisles are of very low pitch, so that the clerestory lights are brought far down, and their jambs and mullions reach to the still lower level of a string-course which is placed just over the crowns of the arches of the great arcade — which in a French building would be the triforium string. The openings are large, though they do not occupy the whole of the clerestory, and are divided with five mullions, geometric tracery, and a transom, a *membrure* which never occurs in pure Gothic design.

Leon is the only one among the three great cathedrals of Spain in which the clerestories of both nave and apse were originally enclosed in a strictly Gothic manner with glazed openings which occupy the whole space between the piers and beneath the arch of the vault. The general tendency to diminish the area of the opening may be due, as Mr. Street remarks,<sup>1</sup> to the fact that in a sunny climate like that of Spain the vast openings of the French Gothic buildings would admit too much light. In so far as this is the case it shows that the Gothic style is itself unsuited to such a climate. And it would, indeed, seem that this style, being a creation of the Northern genius, and a natural outgrowth of conditions peculiar to the North, is hardly an appropriate one for a Southern people or a semi-tropical climate.

The Spanish west front exhibits a variety of treatment; but in very few cases is the French form closely followed. The front of the early Church of San Pedro of Avila is noticeable as an entirely logical and effective design of simple character. It is divided by buttresses into three parts corresponding to the divisions of the interior, and has an outline which follows the section of the building. The pointed arch does not occur in it, but a wheel window of noble design, and of considerable proportionate magnitude, framed in by a shafted arch of two

<sup>1</sup> *Gothic Architecture in Spain*, p. 112.

orders, fills the central bay over the great portal; and each side bay has a plain wall broken only by an oculus at the triforium level.

A different scheme occurs in the west front of San Vincent of Avila, where square towers terminate the aisles. The space between these towers does not (as in France it usually does) form the westernmost bay of the interior. It is treated as an open porch with a pointed arch of two orders, on jamb shafts engaged with pilasters, rising to the level of the vaulting of the interior. Over this arch is a plain story (apparently unfinished) with three rectangular blind compartments divided by shafting, and a round-arched opening in each of the lateral compartments. The enclosing wall of the nave is even with the inner sides of the towers, and has a round-arched portal of elaborate design which recalls those of the Burgundian Romanesque churches.<sup>1</sup> The towers have strong buttresses reaching to the level of the springing of the central arch — above which they are square in plan without buttresses. The north tower has two stories above the great central arch, the first of which is adorned on each face with coupled pointed blind arches of two shafted orders, and with three round shafts worked on each of the angles. The second, or belfry, story is plainer, and of apparently later design. The lower stories of the towers have each a pair of tall, shafted, blind, round arches embraced by a square-edged pointed arch on jambs of the same plain section without impost moldings or capitals.

The west front of Burgos is composed in the French manner, and consists of towers against the aisles with a central bay enclosing the nave and vigorous buttresses accenting the upright divisions. It has, however, been extensively disfigured by alterations at various epochs, so that its general aspect now must be very different from that which it originally presented. But the greater part of the design, above the ground story and beneath the spires, appears to retain its original character, and conforms with the French Gothic of the second half of the thirteenth century. The existing ground story is without character or interest. It appears to be an alteration of a late epoch, but it is, for the most part, without features that give any clear

<sup>1</sup> Cf. Enlart: "Les Origines de l'Architecture Gothique en Espagne et en Portugal," *Bulletin Archéologique*, 1894, p. 12.

indication of the precise period. It consists of an even wall of great thickness advanced beyond the faces of the buttresses, and broken by three very plain splayed pointed portals. Its solid construction suggests that it may have been erected to strengthen the façade. The great rose of the central bay is spanned by a pointed arch, as at Reims, and the remainder of the front resembles the best French models of the period so closely as to need no further description.

The façade of Toledo appears not to have been completed in Gothic times. Above the late Gothic ground story — which extends across the nave and the two inner aisles — nothing of a Gothic nature remains, if anything of the kind ever existed. The outer aisles end in square towers which advance beyond the face of the main front, and have features derived from the Gothic style mingled with Renaissance and modern elements. The north tower is in five stories crowned with a florid spire, while the south tower does not rise above its basement upon which is set a modern octagonal dome on a high drum. The three great portals between the towers, though hardly earlier than the fourteenth century, have the character of French work of that date.

The western front of Leon dates from the thirteenth century, and the original scheme seems not to have included any towers. A narrow porch extends across the whole width of the front proper, and has three great pointed arches with two narrow and acutely pointed openings between them. These five arches are carried on four free-standing piers and two massive projecting walls which, like *antæ*, enclose the ends of the porch. The wall above the arches is crowned with a parapet. This porch, or narthex, shelters three great splayed portals, enriched with sculpture which open into the nave and aisles. Behind the porch the enclosing wall of the nave rises between buttresses. An open arcade of four pointed arches with tracery extends across this wall on the triforium level; and a great wheel, under an unadorned pointed arch, fills the clerestory space. The work above this is of the Renaissance period, and does not, therefore, need to be described here. Vast square and heavily buttressed towers of late Gothic design are set out beyond the aisles — giving the whole front a width much greater than that of the main body of the building.

The spaces above the aisles, on either side of the nave, are left open, and are each spanned by two flying buttresses. The whole composition, though largely made up of unrelated parts, and in some parts widely departing from the usual Gothic scheme, has, nevertheless, a very majestic aspect.

The early Spanish east ends externally have the Romanesque apsidal form, while in those of the later monuments the features of the French Gothic apses are reproduced on a simplified plan, usually, as we have already seen, having only five instead of seven sides.

The transepts of the twelfth century are of rectangular form with plain walls, in some cases, as in San Vincent of Avila, having angle buttresses around which the cornice breaks in the manner that is common in Italy; while in other instances, as in Santa Maria de Irache, there are no buttresses. In the cathedrals of the thirteenth century the façades of the transepts resemble those of the French Gothic, though in some cases with additions—as at Burgos, where a great arcaded screen with a level cornice crowns the façade and rises above the low pitched roof in the place which in France would be occupied by a gable. Vigorous buttresses with offsets strengthen the angles, and a fine-wheel window, with geometric tracery, opens through the clerestory wall, while a large, richly sculptured portal occupies the ground story, the wall of the triforium remaining blank.

In the Cathedral of Leon we get a noble transept end of thoroughly Gothic design.<sup>1</sup> This transept having aisles, its façade has three bays on the ground story with a richly ornamented portal in each. No towers terminate these aisles, and hence the flying buttresses over them become conspicuous features of the design. A shafted arcade of four bays occupies the triforium space in the central bay, and a large circular wheel set in a triangular panel pierces the wall of the clerestory. Over all is a steep crocketed gable pierced with a small oculus flanked by pinnacles which cap the buttresses. This gable corresponds to nothing behind it, since the roof is of a very low pitch, and thus, while it would be an appropriate crowning for a building with a steep roof, it is without meaning here.

<sup>1</sup> This transept façade has recently been rebuilt, and I do not know how closely the architect has followed the original design; but it has, for the most part, the character of a thirteenth-century Gothic composition.

Towers and spires, like west fronts and transept ends, are treated in Spain in a variety of ways. The towers are often, like French towers, compactly incorporated with the main body of the building — as in San Vincent of Avila and Burgos ; but they are not seldom semi-detached — as in San Isidoro and the Cathedral of Leon. The early west towers of San Vincent and the late ones of Burgos have already been described. The tower of San Isidoro is noticeable as a noble design of the eleventh, or early twelfth, century, strongly resembling the western tower of Morienvall in the Ile-de-France. It rises, with slight set-offs and shallow angle buttresses, to the height of three stories, with nearly unbroken walls, and is then crowned with a belfry which has two large round-arched openings, each of three shafted orders, and a slender shaft worked on each angle. The existing roof appears to be a modern one of timber and slates in the form of a low pyramid on a square base. Towers of developed Gothic character, with large openings and set-off buttresses, appear to be rare in Spain. Those of Burgos seem to be exceptional. The west towers of Leon, which are of late construction, have pronounced buttresses ; but in the north one there are no set-offs, and no openings below the main cornice, while above this the design is almost as plain as beneath. The whole aspect of this tower is bold and fortress-like. The buttresses of the south tower are treated in a more Gothic manner. They have set-offs, gabled panelling, and pinnacles, and the openings are more numerous and larger ; though the lower portions still have a fortress-like character. The one completed tower of Toledo is of a post-Gothic epoch, though it has some late Gothic details. Its walls and buttresses are nearly plumb from the ground to the base of the spire. It is thus more like Italian than like French towers, though its proportions are heavier than those which are common in Italy.

True Gothic spires appear never to have been built in Spain. The earlier existing tower roofs are low, and usually not of stone. All Spanish spires, so far as I know, were of late construction. The north tower of Leon has a low stone spire with pinnacles at its base. But the only spires that have anything like the Gothic outline are, like those of Burgos and the south tower of Leon, imitations of late German designs of ornamental open stonework. These are curiously ill adjusted to the towers from

which they rise, being too small at the base to cover the towers well, having no transitional drums, and no effective subordinate features leading the eye upward. The pointed architecture of Spain is thus in various ways different from that of France, and what Gothic character it has is plainly borrowed from the French source.



## CHAPTER X

### GOTHIC PROFILES IN FRANCE

WE may now consider the profiling, that is, the lines of the sections of mouldings and other small members, of the Gothic style, beginning with the forms of capitals and bases the outlines of which fall properly under the general head of Profiles. The other members to be examined under this head are chiefly string-courses, archivolts, vault ribs, and tracery. The profiles given to these members are the result of functional adaptation to the uses they have to serve, and are, at the same time, an expression of that fine æsthetic feeling which governed the Gothic designer in every part of his work.

In arched systems of architecture the primary function of the capital is obviously to prepare the column which it crowns to carry a load more bulky than itself, and one that is usually of a different form. Where the superimposed load is not so large as to overhang the face of the shaft, the capital has, as M. Viollet-le-Duc has shown,<sup>1</sup> little structural function. In the arcades of primitive buildings the impost is often hardly more bulky than the column itself, as in the court of the palace of Diocletian at Spalato, in the Basilica of Maxentius and Constantine, and in some of the early basilican churches. The Roman builders who first sprung arches from the heads of columns did not perceive the necessity of changing the form of the capital (which had been designed to support merely the classic entablature) in order to suit it to new structural conditions. The earliest development of a form of shaft and capital suitably adapted to an arched system of construction appears to have been accomplished by the Byzantine architects in the arcades of the apsidal alcoves of St. Sophia of Constantinople, already referred to on page 33. In these (Fig. 144) classic forms and proportions are wholly thrown aside as no longer adapted to the conditions that had to be met. The column, having now

<sup>1</sup> S.v. *Chapiteau*, p. 481.

to carry a bulky load of square form, instead of a narrow architrave, is crowned with a capital of wholly new character. It is a curious combination of elements derived from all three of the classic types, modified and fused together in a creative way, and not a mere adjunction of parts taken without alteration from different forms, as was the Roman composite capital. The Doric element appears in the convex outline and in the thick

FIG. 144. — St. Sophia, Constantinople.

square abacus; the Ionic in the volutes, which are on two opposite faces only, and are connected on the other sides by the bolsters, or cushion-shaped features, that are peculiar to the Ionic capital; and the Corinthian in the height of the member. The height was needed to gain the necessary magnitude of abacus surface without producing an unsafe and unsightly inclination of the outline. The square form of abacus was needed to fit the square load, and its thickness was required to give strength to its overhanging angles. The capital thus formed is a structural member of great importance, providing a secure bed for the

load with which it is charged. The general outline of the entire column is no less admirable from an æsthetic point of view than it is from that of functional adaptability. The shaft itself, which may be an ancient one, has the slight taper of the best classic shafts, and an entasis of perfectly Greek refinement. It is interesting to find the Greek genius again active, and, under changed conditions, creating appropriately new architectural forms which are no less logical and beautiful than were those of classic times. An instructive lesson may here be drawn from the work of the later Greeks. The practice of using classic elements in connection with modes of building that widely depart in principle from those of classic antiquity finds no support in Byzantine Greek art.

The logic and the artistic skill thus displayed by the Byzantine designers in the shaping and adjustment of the capital were not followed by the builders of Western Europe until after the eleventh century. Marked traces of the Byzantine influence occur, however, in some of the basilican churches of Rome; and among them are many curious imitations of the form of impost that appears to have been first developed in Constantinople. Of these the arcades of the Church of Sta. Maria in Cosmedin, dating from the close of the eighth century, afford interesting instances (Fig. 145). This church, like most early churches in Italy, was constructed largely of materials gathered from the ruins of more ancient buildings. Where the forms of columns, capitals, and bases, thus found ready to their hands, were not well suited to their needs, the early Christian Roman builders employed such devices as they could to adapt them. The Corinthian capital represented in Fig. 145 was not well suited to the support of the bulky load laid upon it. Its abacus is too thin to carry the overhanging weight, and its curved sides do not follow the square impost section. Accordingly a square, flat stone is laid upon it, forming a rude, supplementary abacus, which, however, is hardly thick enough to satisfy the eye. The column to which this capital is adjusted is much more slender than the one for which it must have been designed; but, while it thus fits awkwardly (the base of the capital overhanging the neck moulding), it is large enough for its present function, and the whole impost, though a patchwork of unrelated fragments, is not bad in its general outline, and substantially approaches

the form of the Byzantine impost (Fig. 144). A later form of Byzantine capital which has a thick supplementary abacus, of smaller superficial dimensions than the first, — a type much employed at Ravenna, and occurring in the arcades of San Stefano Rotondo of Rome, — does not concern us here because it is not a type that had influence on the subsequent architecture of the Middle Ages.

FIG. 145. — Sta. Maria in Cosmedin.

From the time of Justinian to the eleventh century hardly any architectural improvements were, as we have before seen, anywhere made. In the Lombard Romanesque a halting procedure in respect to the capital is manifest. The shafts of the piers of St. Ambrogio of Milan are, in some cases, almost as large as the loads which they carry; and while the capital, which is a rude combination of Roman and Byzantine elements, is well shaped to suit such conditions, it has little other use

than to adjust the round section of the shaft to the square form of the load. In the early Norman Romanesque this form of impost is frequent, as in Fig. 146, an engaged shaft of the north aisle of Jumièges. Better forms than this, however, were produced at this epoch, especially in the Ile-de-France, where, in the aisles of Morienvall, capitals occur (Fig. 16, p. 51) which so closely resemble those of St. Sophia as to confirm the belief that a traditional, and perhaps even a direct, Byzantine influ-

ence was felt here very early in the Romanesque development.

In France, after the eleventh century, the practice of giving to the capital a spreading form to carry a load more bulky than the shaft became practically constant; and the degree of expansion varied considerably, according to circumstances. Where compact stone for monolithic shafts could be obtained, they were often made very slender, and yet were sufficiently strong to bear the weight

FIG. 146. — Jumièges.

that might be gathered on a broad abacus. This use of slender monolithic shafts and columns led to the production of the distinctly Gothic type of capital, early examples of which occur in the apse of the Cathedral of Senlis (Fig. 147). The general outline and proportions of the whole impost of Senlis are remarkably similar to those of St. Sophia (Fig. 144). Students of mediæval architecture have hardly hitherto enough observed the extent and the importance of the structural innovations (apart from those connected with the development of the dome on pendentives) that were made by the Byzantine architects, or the cumulative influence of these innovations on the arts of Western Europe, and more especially on the rising art

of France in the twelfth century. But so important were these innovations, and so great their influence, that I believe it hardly too much to say that the Gothic style was made possible by them. The domical groined vault and the expanded capital are forms without which Gothic architecture could not exist. But the capital of Senlis, while exhibiting so much resemblance to

FIG. 147.—Senlis.

that of St. Sophia, is nevertheless not precisely similar. It shows modifications that adapt it to the Gothic functions and the Gothic taste. It is not merely a capital of Byzantine form inserted in a transitional Gothic building. The capital of St. Sophia would not do as well in its place. The abacus is further thickened, giving more resistance to the overhanging parts, while the bell is correspondingly diminished in height, and has a concave

outline. The resulting form is remarkable for elegance as well as for functional expression. The capitals of the sanctuary of Noyon (Fig. 148) are equally admirable in expression and elegant in form. The bell is here much deeper, and the concave profile is more distinctly marked. Of a somewhat more advanced, and richer, type, illustrating the purest and most refined Gothic art,

FIG. 148. — Noyon.

are the superb capitals of the sanctuary of St. Leu d'Esserent.

The supporting columns are, in all these cases, monolithic, and hence they are slender in proportion to the bulk of the load with which they are charged. Where the columns are not monolithic, but are built up of coursed masonry, their diameter is necessarily greater in relation to their height, and the capital is proportionately less expanded. The intermediate piers, for

instance, of the choir of Senlis are round columns built in courses; and they are consequently much larger, and have capitals which are considerably less spreading, than those of the sanctuary, as may be seen in the perspective elevation (Fig. 40, p. 96).

FIG. 149.—Triforium of Choir, Paris.

The round columns of the ground story of the Cathedral of Paris are, like those of the choir of Senlis, built up in courses, and the expansion of their capitals is consequently slight; but in the triforium of the choir the shafts of the arcades are comparatively slender monoliths, and their capitals (Fig. 149) are



more spreading; while in the triforium of the nave the shafts are still more slender, and the capitals (Fig. 150) are very much expanded.

In the early Gothic the volume of the load may, in some situations, appear smaller than that of the supporting shaft. A case

FIG. 150. — Triforium of Nave, Paris.

of this may be observed in the apsidal aisle of St. Germer (Fig. 27, p. 73), where the diagonal rib appears smaller than the shaft which carries it. A side view will generally show, however, that the rib is deeper than the shaft. In advanced Gothic it is not uncommon to find imposts in subordinate positions in which the load and the support are of the same magni-

tude and the same form, as, for example, in tracery of large openings. In these cases the capital has no real structural function, but is used ornamentally, with a pleasant structural suggestiveness. There is no impropriety in this. The eye readily perceives that the capital is used to harmonize the tracery with the larger structural elements.

Another principle governing the forms of Gothic capitals appears to be that the thickness of the abacus is in proportion to the expansion of the bell. This principle is subject to exceptions, but I believe it will generally be found to hold. Thus in the capital (Fig. 150), where the expansion reaches about its maximum, the thickness of the abacus is equal to nearly half the total height. In the capital (Fig. 149), where the expansion is considerably less, the abacus is correspondingly thinner. The capitals of the triforium of Laon (Fig. 151) have about the same spread as those of the choir of Paris, and the thickness of their abaci is in nearly the same proportion. But in the massive and slightly expanded capitals of the ground-story columns (as in those of Paris, Fig. 61, p. 129) the abaci are comparatively thin. The constructive principle involved is, of course, that the slightly expanded capital presents no projecting parts that are not, when crowned with a thin abacus, abundantly strong for the weight with which they are charged; while those of the more spreading form would be weak where they overhang if they were not surmounted by a thick crowning member. The principle is not, however, as I have just said, always strictly carried out. In the Cathedral of Senlis, for instance, the less spreading capitals of the choir and nave have abaci hardly, if at all, thinner than the much-spreading ones of the sanctuary. But in early buildings, like Senlis, the Gothic principles were yet undeveloped in many details.

In the Romanesque period the abacus and the bell were sometimes wrought out of separate stones, as in the capitals of the aisle of Morienvall (Fig. 16, p. 51), where a joint may be seen between these two parts. But in the Gothic monuments the entire capital, including the neck moulding (which in the classic orders is worked on the shaft, and not on the capital, as in Sta. Maria in Cosmedin, Fig. 145, p. 307), is carved out of one block. The profile of the capital thus includes the abacus and the neck moulding.

In the early Gothic the abacus is usually square in plan, in conformity with the section of the load, which is usually square until after the first quarter of the thirteenth century. But when in the more advanced stages of Gothic design the archivolt sections became polygonal, the plan of the abacus assumed a corresponding shape, as in the upper portions of

FIG. 151. — Triforium of Laon.

the nave of Amiens. The round abacus hardly occurs in the early, and early fine, Gothic of France, except occasionally where a compound impost renders it suitable, as in the great piers of Paris (Fig. 59, p. 127), and in subordinate places, as in the jambs and dividing members of the clerestory openings of Amiens, where the impost sections are round.<sup>1</sup>

<sup>1</sup> In Normandy the round abacus is of frequent occurrence in the structural parts of the architecture of the early thirteenth century.

The profiling of the abacus is comparatively simple, though a considerable variety of effect is obtained by different combinations of the simple mouldings. Starting from the plain bevelled stone of the eleventh century (Fig. 16, p. 51), the mouldings of the early Gothic abacus are but slightly salient, as in the profiles of St. Evremond of Creil (Fig. 152, *a*) and of the Cathedral of Senlis (Fig. 152, *b*). They gradually become more pronounced, as in the triforium of the nave of Paris (Fig. 152, *c*, *d*, *e*, and *f*), but never exhibit very salient members alternating with deep hollows, as in later Gothic design. The mouldings are rarely, if ever, of uniform character throughout an entire building, and they frequently vary a good deal in a single arcade. While the same profile may be often substantially repeated, it frequently happens that several different ones are found in the abaci of a given series of capitals. Thus in the



FIG. 152.

north triforium of the nave of Paris, where there are in all fourteen capitals, the four different profiles, *c*, *d*, *e*, *f* (Fig. 152), occur. Of these, counting from the transept, the profile *c* occurs in the first, second, third, fourth, and eighth; the profile *d* in the fifth, sixth, ninth, and tenth; the profile *e* in the seventh; and the profile *f* in the eleventh, twelfth, thirteenth, and fourteenth. Where the same form is repeated, more or less difference in the proportions of the parts will generally be found. The work was wrought largely with a free hand; and though beautifully finished, it rarely exhibits any absolute mechanical precision. The same member may have different thicknesses at different parts of its length, and the lines are thus hardly ever perfectly straight or precisely parallel. The execution has a character and a charm akin to that of free-hand drawing; it has nothing of the dry precision of work wrought with rigid exactness by rule and compass.

The upper member of the early French abacus has a square section, and this is retained until about the end of the first quarter of the thirteenth century. After this it assumes a curved profile, more or less like that shown at A in Fig. 153 from the west front of Amiens Cathedral, or like B from the triforium of the same building.

The outline of the bell is almost without exception a fine Corinthianesque curve. Of the capitals of the ancient orders the Corinthian only influenced to any considerable extent the art of the Middle Ages. Derived from the Roman type and



A



B

FIG. 153.

logically modified in part under Byzantine influence, the Corinthianesque capital of the later Romanesque builders was an improvement on its prototype, while that of the Gothic artists of the close of the twelfth century was further developed in its functional character and refined in its profile. This type is one that admits of almost endless changes which

adapt it to the varied conditions that Gothic capitals have to meet. The circular form of the bell is adjusted to the square of the abacus by crockets which take the place of the classic volutes and afford support to the projecting angles of the abacus—as in Figs. 149 and 150. The French Gothic capitals of what may be called the early fine period—*i.e.* the last quarter of the twelfth century—are among the most beautiful objects ever produced by human art. For structural adaptation, joined with subtle grace of contour, they are, in fact, quite unequalled by those of any other age or style.

It does not come within the scope of this work to follow out the later transformations of the Gothic capital; but it may be remarked that during the course of the thirteenth century certain modifications of its form were introduced which, though not improvements, were logical adaptations to changed conditions, and which sometimes produced results that have much merit. These modifications were consequent upon changes that had been wrought in the profiles of the archivolts and vault

ribs, giving them a polygonal section. Arch sections of other than square form had sometimes been employed from the earliest times. But these forms, as we shall presently see, were very simple and did not lead to any change in the shape of the abacus. When, however, more complicated mouldings were introduced, and had become general, the form of the abacus was changed correspondingly. The bell remained substantially unaltered, but the absence of the salient angles of the abacus removed the need of supporting crockets; and though crockets continued to form parts of the design, they were now only ornamental features. Having no functional use or expression, they were often placed, not under the angles of the polygonal abacus, but under its alternate sides, as in Fig. 154, a capital from one of the chapels of the choir of Amiens. It is true that the crockets of Gothic capitals had always had a largely ornamental purpose; and that, together with those under the corners of the abacus which had a functional use, there had been others, of smaller size, alternating with the main ones, and placed lower down on the bell where they could have only an ornamental value — as in Fig. 149. These, however, were subordinate features, carrying out the general scheme of enrichment in a manner that harmonized with the structural form. The capital (Fig. 154) still has a good deal of functional expression. The beautiful foliated crockets are compactly gathered under the abacus, and the whole outline is in keeping with the structural office of the member. This character was generally retained in the earlier types of capitals with polygonal and round abaci; but at a later period the crocket was over-developed, and finally became an extravagant and unmeaning excrescence. In imposts where such capitals occur, the load is apt to be comparatively small, and the abacus is accordingly diminished, and is often made very thin. Even these capitals sometimes have considerable beauty, and the crockets are often designed with much grace and variety; but they are wanting in that functional expression which marks the best capitals of early Gothic art.

The forms of bases are hardly less interesting than those of capitals. The Gothic base is, as before remarked, always some modification of the Attic base of classical antiquity. Bases closely resembling those of the Erechtheum and the Choragic Monument of Lysicrates may be found in Gothic buildings;

but the proportions of the parts are more or less changed in conformity with the new conditions, and the profiling becomes, in some cases, even more refined and beautiful than those of ancient times. The Gothic shaft having to carry more weight in proportion to its size than the classic column, and being more subject to chances of lateral movement, required a firmer and stronger base. The round ancient base resting on its stylobate

FIG. 154. — Amiens.

without the interposition of a plinth, or with a plinth of shallow proportions, suited perfectly well the simple conditions of classic construction; but the Gothic base had to be both deeper and more spreading. For if a heavily charged slender column, under conditions which render it liable to more or less disturbance of its equilibrium, be placed upon a thin plinth, sooner or later some fracture of the plinth will be likely to occur. But

if the plinth be thickened, it will remain more safe. If, in addition, a second stone, also of considerable thickness, be placed beneath the first, a secure footing for the column will be obtained. Gothic bases are constructed in this manner; they are always thick, and in most cases are composed of at least two blocks of stone. In the base, as well as in the capital, the first innovations seem to have been made by the Byzantine architects. The bases of the shafts whose capitals (Fig. 144) we have just examined have the form shown in Fig. 155, which is a wide departure from the ancient base, and, for an arched system of construction, it is an improvement tending in the direction of the Gothic base. The lower torus is here considerably deep-

FIG. 155. — St. Sophia.

ened, and is placed upon a plinth of unprecedented thickness. Early Romanesque bases are naturally less elegant in profile than those of St. Sophia (which exhibit the subtle artistic skill of the later Greek designers), but they are usually composed of the same elements. In St. Ambrogio of Milan, for instance, the lower torus is much less salient, and a narrower plinth is used, so that the entire base has a less expanded form — as we have already seen is the case with the capital also. In early Norman Romanesque art, as in the nave of the Abbaye-aux-Hommes, rudely shaped bases frequently occur in which all trace of the Attic profile is lost; but in the later Romanesque of the Ile-de-France, as in St. Étienne of Beauvais (Fig. 156), the Attic profiling is distinct, though the contours are rude. The parts, however, already exhibit Gothic propor-



tions, and the plinths are of remarkable height. This profile is varied in the bases of St. Martin des Champs (Fig. 157); and other variations occur, with increasing elegance of contour, in the base profiles of early Gothic monuments—as in those of



FIG. 156.

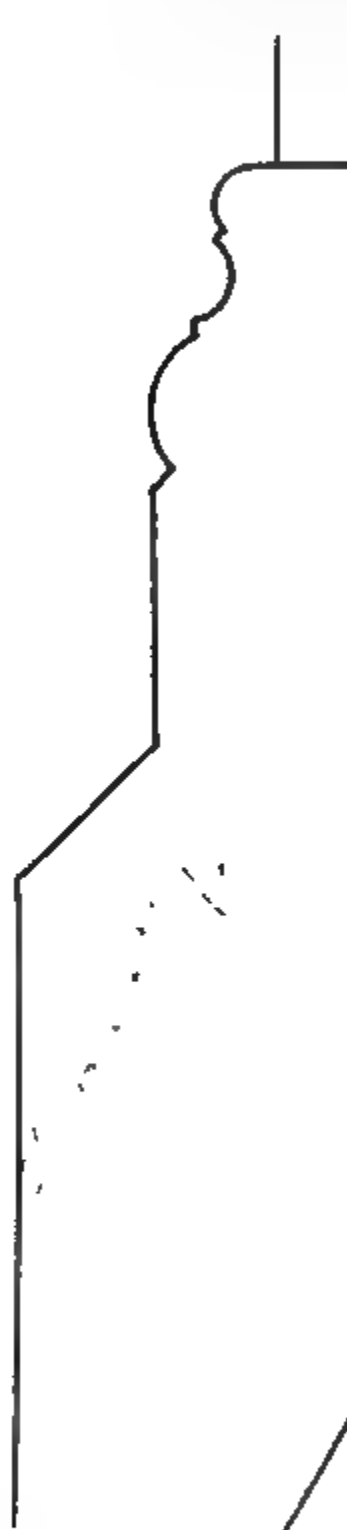


FIG. 157.

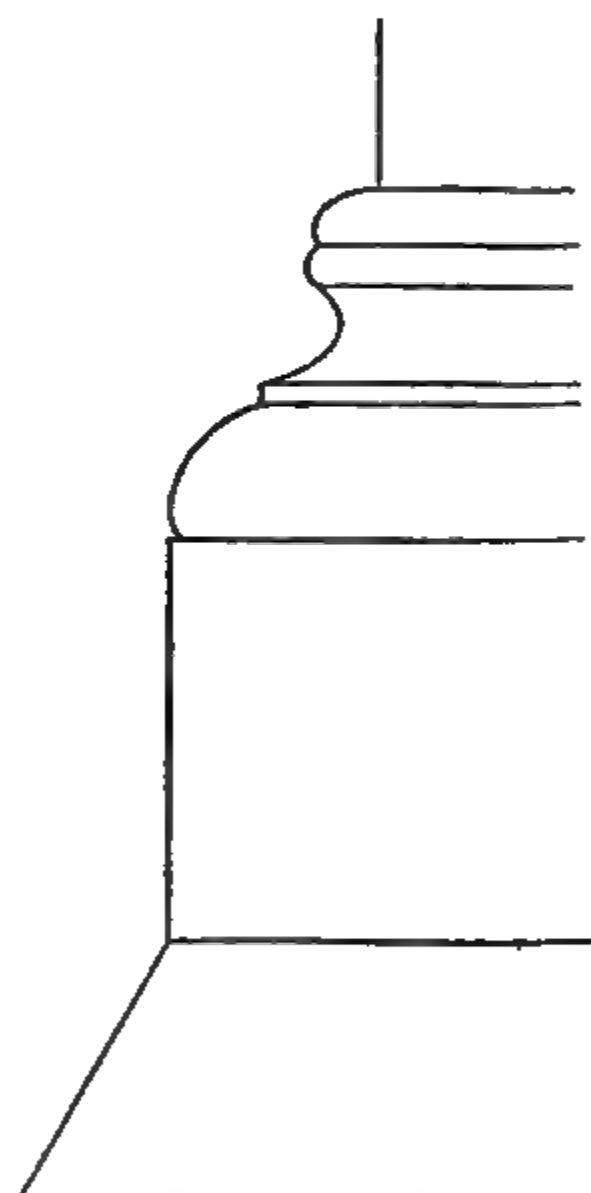


FIG. 158.

the nave of Senlis (Fig. 158), and the nave of St.-Germer-de-Fly (Fig. 159); while in the choir of Paris (Fig. 160), and in many other contemporaneous buildings, very subtle profiles are found, in some of which the lower torus is flattened with exquisite effect.

A conspicuous feature of the early Gothic base is the *griffe* or angle spur. This is an ornamental projection from the lower torus covering the angles of the square plinth. It assumes a great variety of fanciful and beautiful forms during the entire early Gothic period. In Fig. 160, from the choir of Paris, the corners of the plinth are cut off, leaving little room for the *griffe*. Where this is not the case, this feature becomes more developed, as in the exquisite example (Fig. 161) from the nave of Reims. While it can hardly be said that the *griffe* has a really constructive function, it nevertheless has a functional expression giving the lower torus an apparent grasp of the plinth as well as an appropriate ornament. This feature appears first, I believe, in the bases of the Lombard Romanesque designers. It does not occur on the bases of St. Sophia, nor, I think, in the later Byzantine architecture. But rudimentary forms of it appear on the rudely executed bases of St. Ambrogio of Milan. In the Northern Romanesque, however, it is rare. It does not occur in either of the abbey churches of Caen, nor in the nave of Vézelay, nor in St. Étienne of Beauvais; but in the apse of Poissy it is superbly developed, and in the early Gothic churches it is rarely absent.

The base, like the capital, is more spreading in proportion as the shaft is diminished in bulk; and the profiles of the bases of small arcades are often among the most exquisite objects which the genius of the Gothic architects produced. Of such bases none are finer than those of the triforium of the nave of Paris, of which Fig. 162 is a profile and Fig. 163 a perspective view. It will be seen that the *griffe* on the nearest corner, unhappily broken, differs from the others—affording an instance of the variety of treatment which characterizes Gothic design.



FIG. 159.

Toward the end of the twelfth century the plinth began to be diminished in magnitude so that the lower torus overhung its sides—as in the profile (Fig. 164) in the choir of Chartres. The salient angles were thus made smaller, and the *griffe* was usually omitted; though it was sometimes included, being wrought on a smaller scale. Occasionally the angles of these smaller plinths are rounded off, as in the small base (Fig. 165)

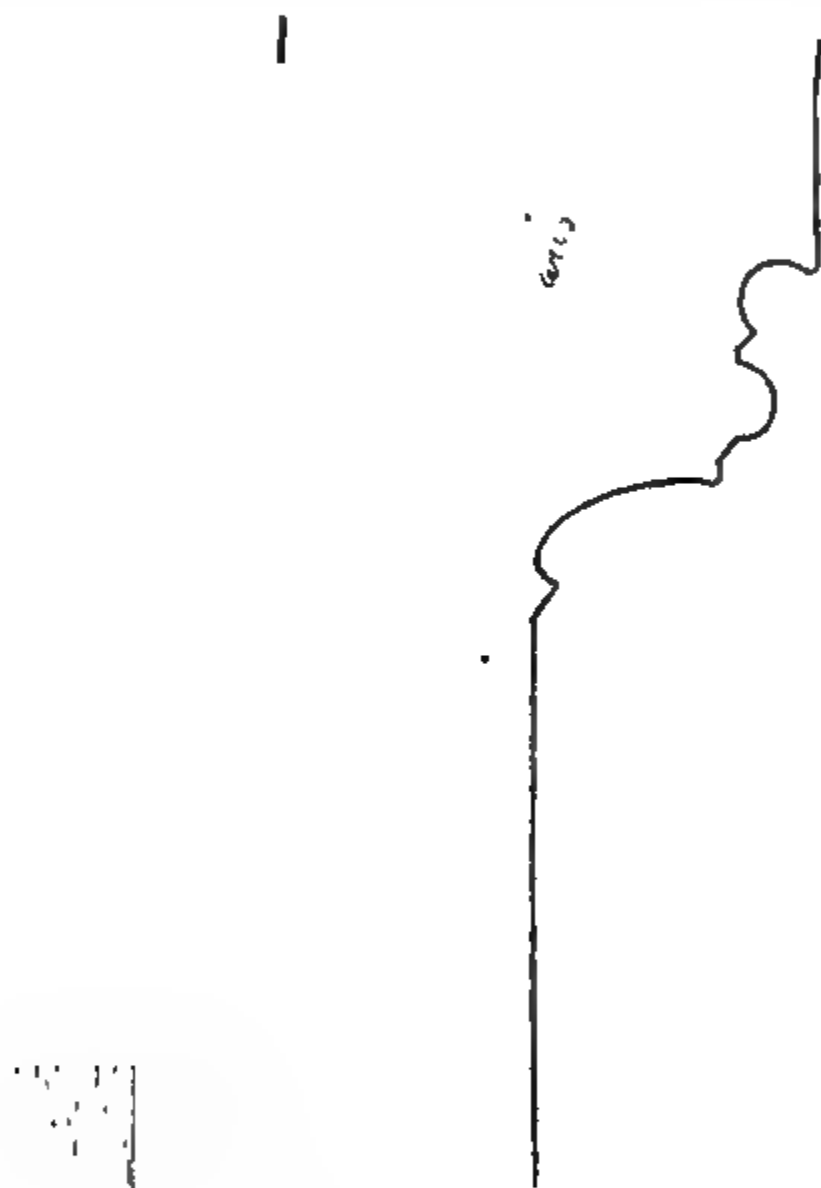


FIG. 160.

from the choir of Soissons; and at length the plinth becomes octagonal, and sometimes round, so as to present no angles that project beyond the torus—as in the westernmost piers of Paris (Fig. 166), and the piers of the nave of Amiens (Fig. 167). In these cases the *griffe* necessarily disappears altogether. While the diminished octagonal plinth has the advantage of taking up less room on the pavement, and of presenting no sharp angles,—dangerous, or inconvenient, to passing crowds,—it is less satis-

factory than the former type in all other respects. The Gothic base of the middle of the twelfth century, with its square plinth and angle spurs, is unequalled in architectural beauty by those of the later character.

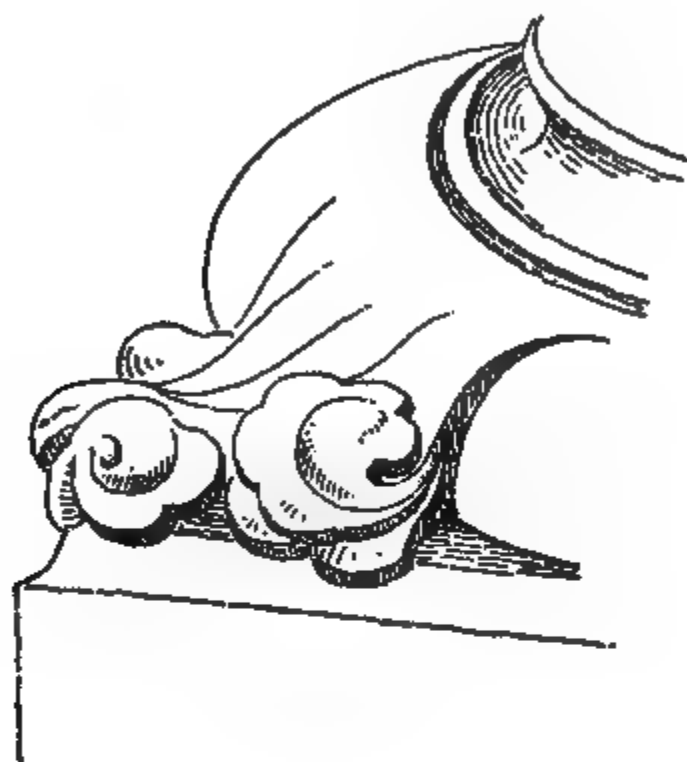


FIG. 161.



FIG. 162.

FIG. 163. — Paris.

The mouldings of the bases of Amiens are not so subtle in profile (Fig. 166) as those of the earlier period usually are; but they exhibit one interesting peculiarity — that, namely, of an extra thickness given to the lower torus of the great central column. The mouldings are thus proportioned to the

magnitudes of their respective shafts in a manner corresponding to that in which the several capitals of the head of the pier are proportioned to the same shafts, as remarked above (p. 128), of the compound pier of Paris.

The development of the profiles of string-courses in the Gothic of France forms one of the most interesting minor branches of our subject. The external string was, during the eleventh century, very simple in form, and had usually a flat, though sometimes a sloping, upper surface. The profiles



FIG. 164.

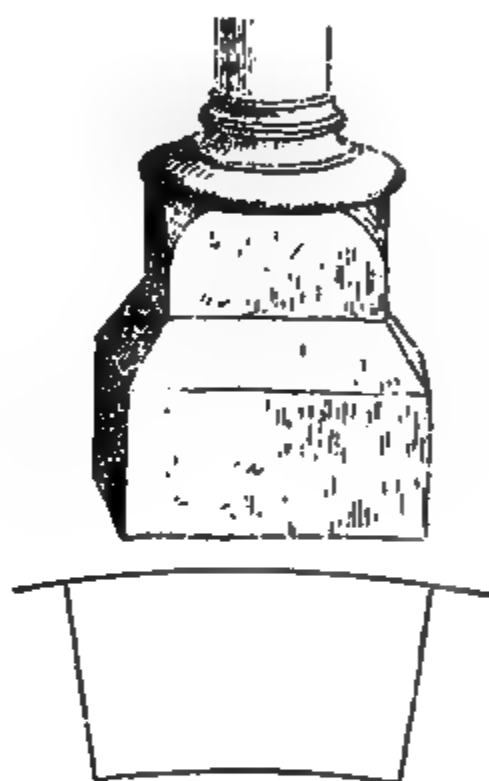


FIG. 165.

(Fig. 168) from the small Romanesque Church of Nogent-les-Vierges, near Senlis, sufficiently illustrate their general character. In the earlier transitional buildings the same forms were retained — as at A, Fig. 169, from St. Evremond at Creil. But the early Gothic builders soon devised changes which better adapted the string to the exigencies of a Northern climate; and at the same time converted it into one of the most pleasing architectural features. The flat upper surface was objectionable because it afforded lodgement to snows in winter, and caused incessant spattering against the walls in times of rain.<sup>1</sup> It was seen that it must be avoided. Innovations were accordingly made, an early instance of which occurs on the exterior of the

<sup>1</sup> Cf. Viollet-le-Duc, s.v. *Bandeau*, p. 105.

choir of the Cathedral of Senlis shown at B (Fig. 169). Here the profile (A) of St. Evremond of Creil is modified by a sloping upper surface; while a second, deeper course, with a steeply sloping side, is placed above it—the upper wall being in retreat of that of the ground story.<sup>1</sup> This must be one of the first instances of those progressive changes which led to the formation of the distinctively Gothic dripstone. The sloping upper

4. in

FIG. 166.

surface had, indeed, been sometimes given before this time, as, for instance, at Morienvall (C, Fig. 169); but before the middle of the twelfth century it is rare. We may not be able to trace all of the successive steps of transformation, but before the

<sup>1</sup> This string is not now visible from the exterior, it having been removed, in the course of subsequent alterations, from those portions of the wall which are still exposed to view. But in the space over the vaults of the more recently constructed chapels on the south side of the choir, east of the old sacristy, portions of it are still in place.

close of the twelfth century the form A (Fig. 170), from the nave of St. Pierre of Chartres, was reached. An important function of the Gothic string-course is to prevent continuous

washing of the walls in times of heavy rains. In order to do this effectively it must be so formed as to throw off the water quickly and completely. The form B (Fig. 169) of the string of Senlis, though an improvement on that of St. Evremond (A in the same figure), is still imperfectly adapted to this function; for its slope is a broken one, and the form of the under surface is such that water may trickle backwards and wash the roll moulding beneath continually. But in a string profiled like that of St. Pierre (A, Fig. 170) the drip is effectually cut off when it reaches the sharp edge formed by the deep undercutting.

Early in the thirteenth century this latter form was amplified — as at B (Fig. 170), the profile of the cornice of the ground story of the cathedral of Amiens, where the large hollow added beneath affords a sheltered place for foliate sculpture. The string thus becomes one of the most ornamental features of the building; the deep hollow gives a vigorous horizontal line of shadow which is contrasted by a line of light caught on the projecting round. The narrow fillet under this gives a sharp line of accent, while the regularly spaced bosses of carving in the lower hollow produce a line of exquisite enrichment. Another example (Fig. 171), from the cornice of the Cathedral of Paris, will help to show what variety was attained without adding to the leading members that make up the profiles already

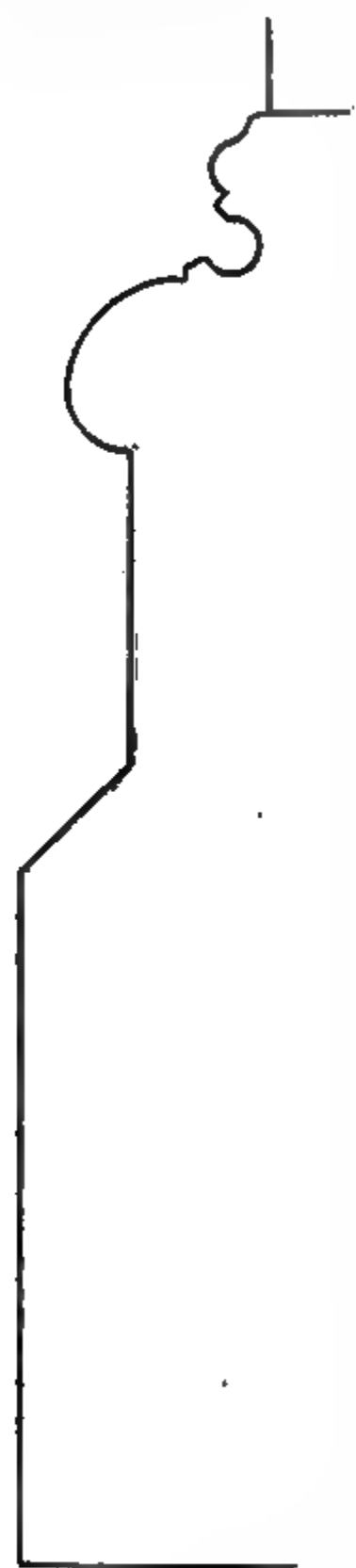


FIG. 167.

noticed. Hardly any two Gothic strings have the same profile; but the variations consist in changed proportions of the parts. In these developed profiles the upper surface always gives a

steep straight line, the lower edge forms a fillet at right angles to the slope, and the undercutting of the adjoining hollow is deep enough to prevent any trickling back of the drip.



FIG. 168.

The set-offs of buttresses are profiled like string-courses, as in the set-offs of Fig. 172, all from the Sainte Chapelle of St.-Germer-de-Fly.

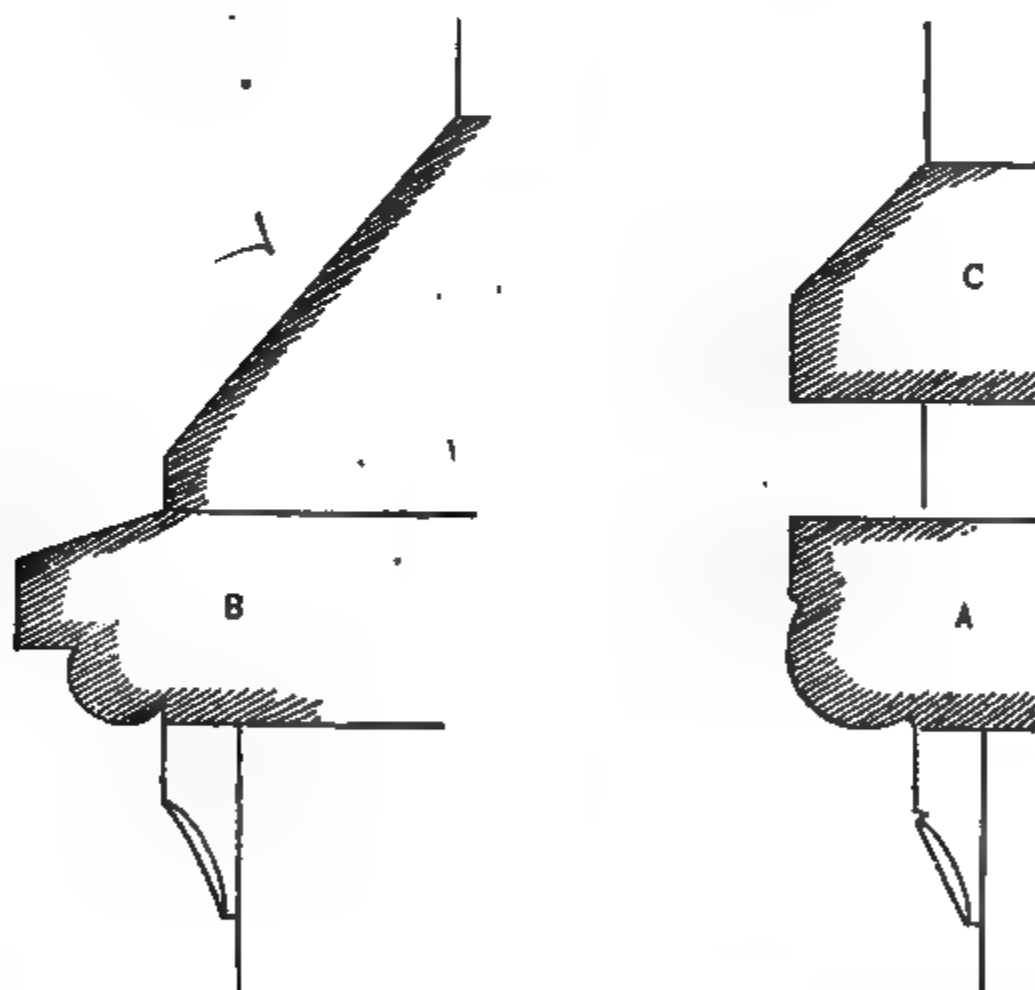


FIG. 169.

The function of the internal string is, of course, more simple than that of the external string. It is merely a pronounced bond course marking the triforium and clerestory divisions, and the dripstone profile is therefore uncalled for here. The internal string of the Romanesque architecture of the Ile-de-





line of vision, as in the triforium string of the nave of Paris (Fig. 175), the bases will not, if set close to the edge of the string, be hidden from view. In the Cathedral of Paris, however, the triforium arches are of two orders, and the bases of the shafts of the suborders, being necessarily set back at a considerable dis-

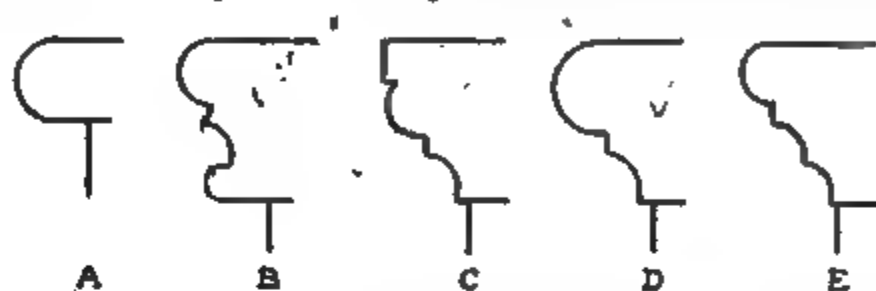


FIG. 173.

tance from the edge of the triforium ledge, are quite out of sight from the pavement, notwithstanding the slope given to the upper part of the string. This profile was, however, rarely used in the best Gothic period. For interior strings the flat top was preferred, and the bases of the triforium shafts are

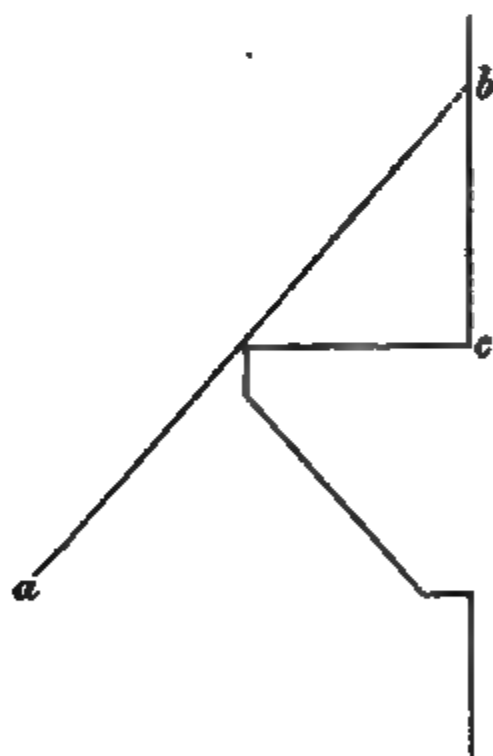


FIG. 174.



FIG. 175.



FIG. 176.

brought into view by being raised on a course of masonry. At Chartres, for instance, a vertical course of masonry rises above the string, so that the bases, which are set flush with the course on which they rest, are in full view from the pavement. In the nave of Amiens the richly ornamented string (Fig. 176) has a simple profile with the flat top. The triforium, of two orders, is here set back considerably so as to bring the face of the shaft

which carries the longitudinal rib of the vaulting into the plane of the face of the ground-story wall. This gives three orders of members in the triforium and places the shafts of the sub-orders very far back. But they are brought into view by being raised on a high course of masonry. This course is set near the edge of the string, and is profiled with a long slope, a fillet, and a round. To render the bases effective at the extraordinary height of this triforium, they are provided with very high plinths. By thus raising the members which would otherwise be hidden by the flat-topped string, the necessity for a sloping upper surface to the string itself (which too much resembles that of the external dripstone) was avoided.

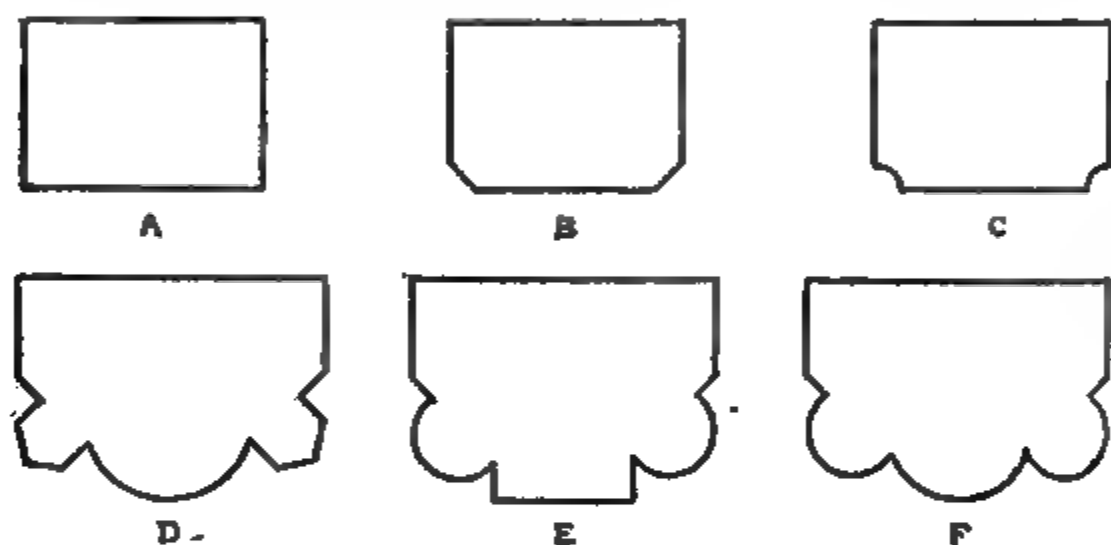


FIG. 177.

In the profiling of vault ribs and archivolt functional exigencies, though not wholly absent, were less influential than in string-courses. The satisfaction of the eye was here more largely the controlling motive of design. The characteristic profiles were developed early; and few changes were made during the period through which the style retained its integrity. The plain square transverse rib A (Fig. 177), frequently used in Romanesque vaulting, as in the apsidal aisles of Poissy, was heavy in appearance, and was little improved by the chamfer that was sometimes given it—as in B in the aisles of St. Étienne of Beauvais and the apse of Morienvall, or the cove C in the aisle of Bury. In the apsidal aisle of St. Martin des Champs in Paris the profiles D, E, and F occur. These appear like so many attempts to lighten the effect of these ribs, and to produce agreeable combinations of mouldings; but the results are still heavy and inelegant. In St.-Germer-de-Fly and else-

where the transverse rib assumes the profile A (Fig. 178), which in the apsidal aisle of St. Denis has the improved form B. This last, with slight variations of the details, became the most characteristic profile for this member, and for the main archivolts, during the remainder of the twelfth century. This form of rib, or archivolt, has, it will be seen, a square section with its edges softened by the round mouldings which are contrasted by the dark lines of the deep incisions. The profiles of these incisions

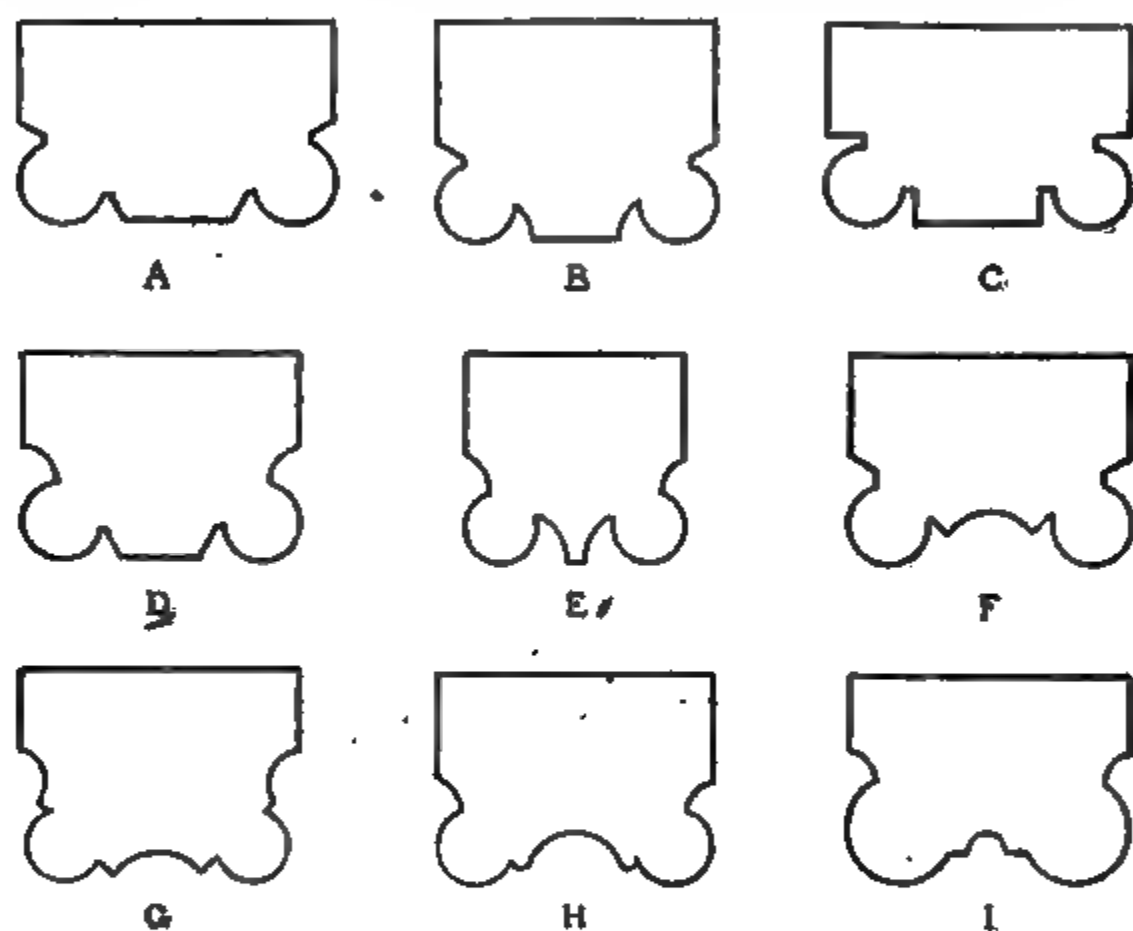


FIG. 178.

vary considerably. In the ground-story archivolts of the choir of St.-Germain-des-Prés, in some of the archivolts of Poissy and elsewhere, they are cut in at right angles to the soffit and sides — as at C, giving a strong narrow line of dark on each side of the round. In St. Denis, B, a lighter and more elegant effect is obtained by the inclined direction of the sides of the incisions, and by the curve given to those of the soffit. In the apsidal aisles of Paris the curved profile is given to the incisions of the sides, but not to those of the soffit, as in D, while in the diagonal ribs E, from the same vaulting, a still more elegant profile is produced by curving the sides of all the incisions. The diagonal ribs, being narrower than the transverse

ribs, have, when this profile is used, the flat portion of the soffit reduced to a fillet, as shown in the figure. Less common, though not infrequent, early rib profiles have a hollow in the middle of the soffit—as at F, from the choir of St. Germer; G, from St. Hildevert of Gournay; H, from the transept of Taverny near Paris; and I, from the choir of Laon.

The diagonal ribs are usually of a different profile. In the oldest Romanesque vaults of the aisles of St. Étienne of Beauvais they are rectangular with a wide bevel on each edge. In the apse of Morienvall, and other contemporaneous work, they are three-quarter rounds, as at A (Fig. 179). In the apsidal aisles of St. Denis the profile is as at B, while at Senlis this form is improved by bringing the curves together in a more acute edge, and by introducing a sunk fillet, as at C. The size

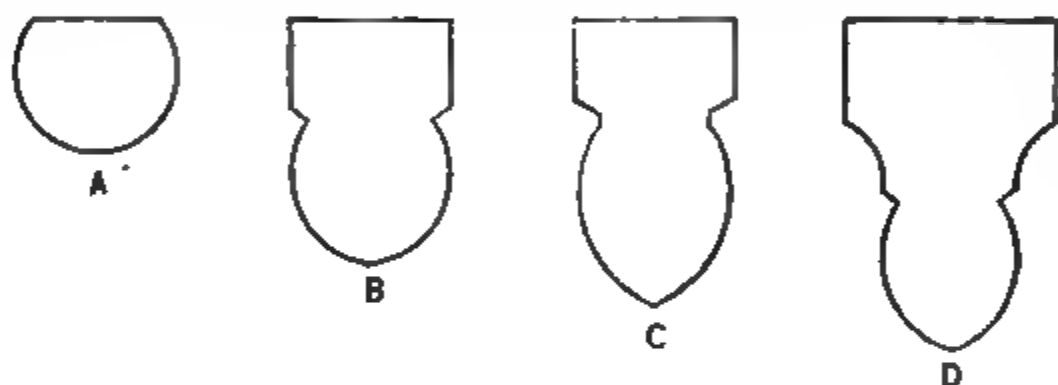


FIG. 179.

of the single round of a diagonal of this form is larger than the rounds on the edges of the square transverse and longitudinal ribs; and it may be questioned whether this gives good proportion.<sup>1</sup> However this may be, any objection that may be felt on this score to the earlier vaulting was avoided in the Cathedral of Paris by giving substantially the same profile (D, Fig. 178), to both diagonals and transverse ribs. The rounds of the smaller ribs were then naturally made smaller than those of the larger ones, and thus good proportion was secured. At Laon the profile D (Fig. 179) is used for the diagonals in connection with the profile I of Fig. 178. This may be regarded as an improvement on the earlier combination with the single large round on the diagonal; but the rounds of these diagonals are still too heavy. Another combination occurs in the earlier vaulting of the apsidal chapels of Senlis, where the profile C (Fig. 178) of

<sup>1</sup> Cf. Viollet-le-Duc, s.v. *Profil*, p. 506.

the diagonals is associated with A (Fig. 180) of the transverse ribs. The lower round of this profile is large enough to secure good proportion; but it is an inelegant form, and was not much used after the middle of the twelfth century. Variations of this profile, which were of frequent occurrence before 1150, are found in the diagonal ribs of the aisle vaults of the nave of Bury, B, in those of the eastern bay of Berzy-le-Sec near Soissons, C, and in those of the choir of Noyon, D, in the same figure; while the unusual profile, E, occurs in the sub-order of one of the transverse ribs of Berzy-le-Sec, and the form F in Ville-

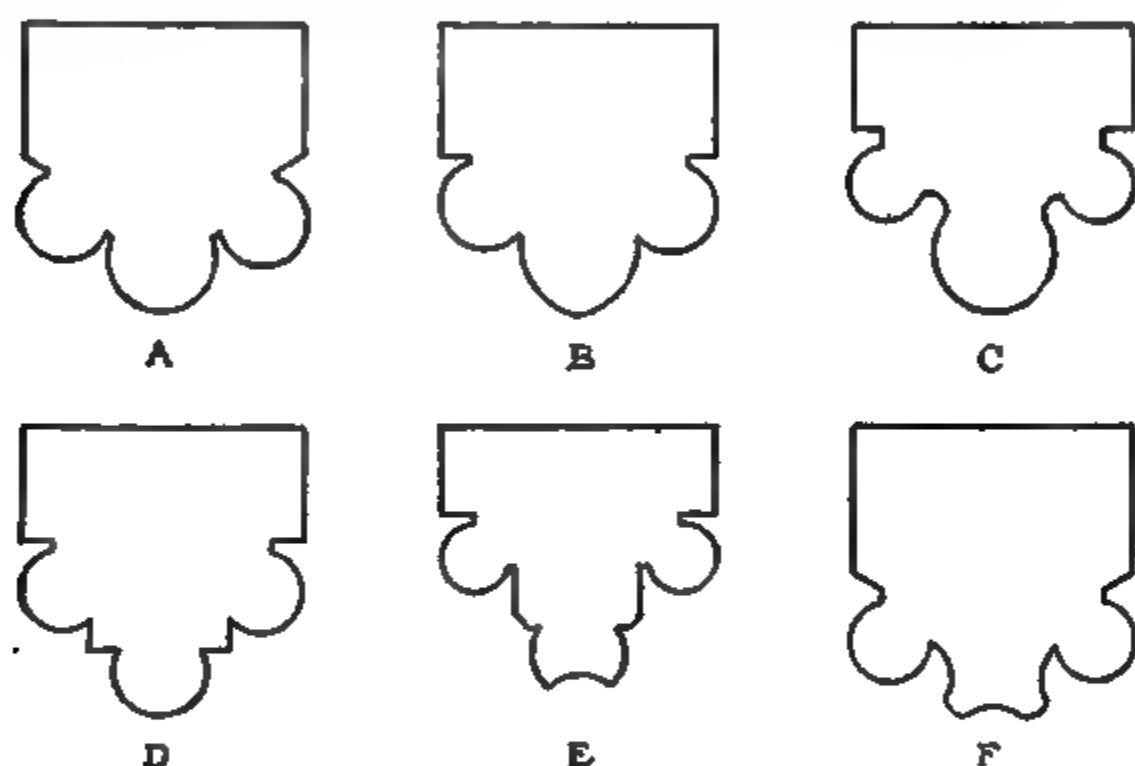


FIG. 180.

neuve-sur-Verberil (Oise). At Amiens the rib loses the square section of the more general type by the addition of a larger round member to its soffit, as at A (Fig. 181), and thus is produced what may be regarded as the perfected Gothic vault rib, which is merely a more elegant variety of the finest earlier types. The added member strengthens the rib in the direction of the downward pressure of the vault, and makes it safe to reduce its width. Great lightness of effect is thus secured, together with general harmony. This is a beautiful profile in which the rounds are effectively contrasted by the reverse curves of the incisions, and by the fillet on the soffit.

In the vaulting of the nave of Amiens this profile is employed for both transverse and diagonal ribs, and these being of different

magnitudes, and the parts of each having appropriate scale, good proportion is maintained throughout, as in the case of the more simply profiled ribs of the Cathedral of Paris. This profile was

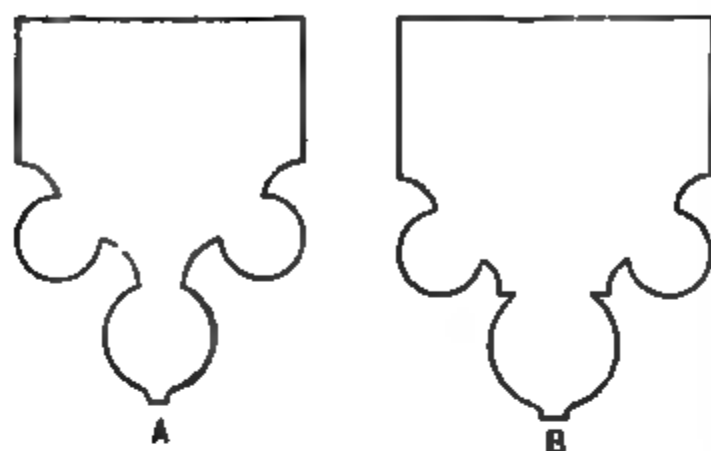


FIG. 181.

widely used in vaulting after the first quarter of the thirteenth century; and it was not materially altered during the remainder of the best period of Gothic art. Numerous variations occur, however, in the proportions and details—one instance of which is

found in the choir of Beauvais (B, Fig. 181). But while the vault ribs frequently take this form in the monuments of the first half of the thirteenth century, the main archivolts retain, in most cases, the square section with the round-edge mouldings—as in the ground-story arcades of Amiens and Beauvais.

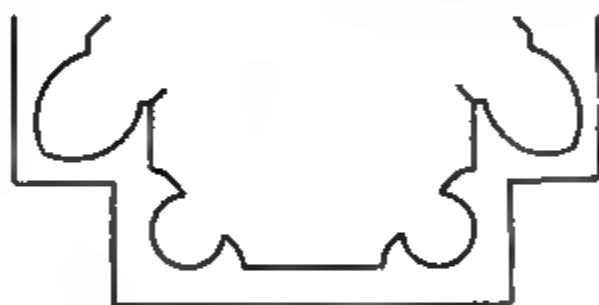


FIG. 182.

The adjustments as well as the forms of the vaulting capitals were generally determined by the profiles of the ribs. When in the early Gothic vaulting

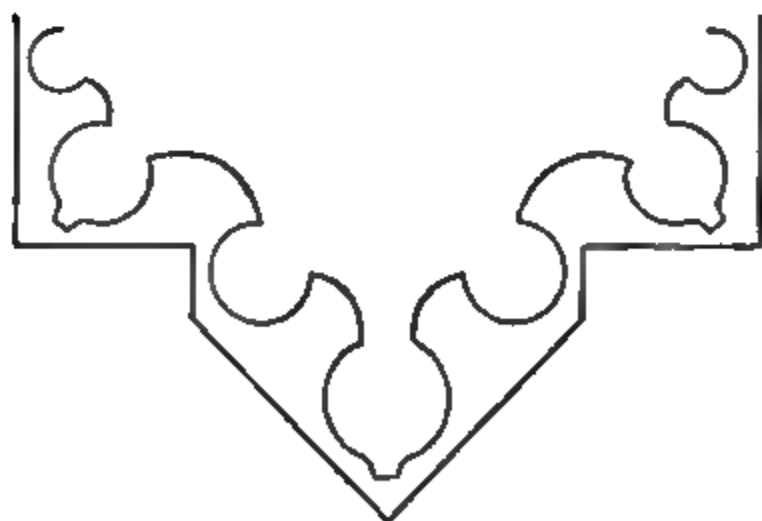


FIG. 183.

the diagonal ribs had the section shown at C (Fig. 179, p. 332), the arrangement of the supporting capitals was as in Fig. 182, an impost from the triforium of Sens. With the employment of the square section for all the ribs the arrangement be-

came as in Paris (Fig. 46, p. 114). But with the new rib profile of Amiens the lateral capitals had to be again set square

with the wall, while the abacus of the central one was placed diagonally, as in Fig. 183.

The only remaining members whose profiles call for examination are mullions and tracery. These in the early and finest periods are simple. The oldest form of mullion is a plain rectangular member with edges bevelled and a rabbet on each side to receive the glass, as at St. Leu d'Esserent (A, Fig. 184). This form is appropriate in connection with the heavy pierced tympanum of St. Leu; but in connection with tracery and as a member whose function is to support the glass of an opening with the least obstruction to the passage of light, it is not a

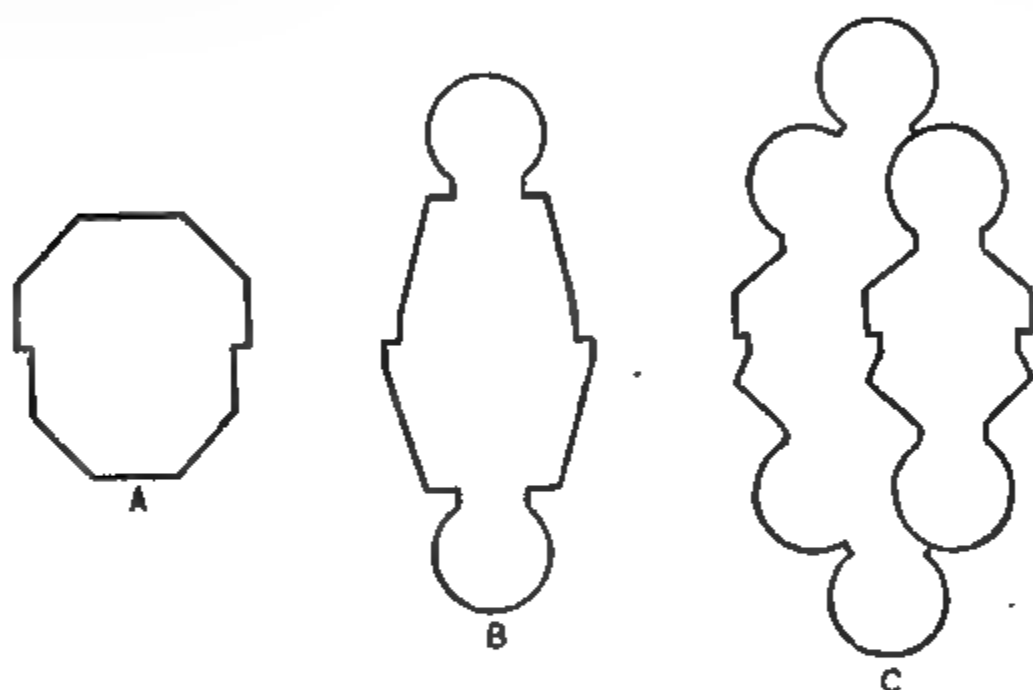


FIG. 184.

good form. The mullion has to resist the force of winds pressing inward. In large openings this force is considerable, and to withstand it, the mullion requires to be deep. But in order that it may offer the least possible obstruction to the passage of light, it is necessary that it should be as narrow as is consistent with the strength that is needed to carry the weight of the tracery with which it is charged. These exigencies were recognized by the designer of the dividing members of the apsidal openings of the Cathedral of Reims, and the mullion section (B, Fig. 184) from one of these openings established the typical Gothic form, which was but slightly modified during the best epoch, except by the addition of other members similar to those of which this section is composed, in cases where the more numerous divisions of larger openings called for larger mullions



and tracery with lighter subordinate members. The apsidal openings of Reims require but one mullion each, and all of the tracery which branches out of it has the same profile. But in the vast openings of the clerestory of Amiens, three mullions were needed, the central one of which requires to be stronger than the others. It is therefore, together with the jambs, treated as of two orders—and hence has the profile C (Fig. 184), which is an amplification of the profile of the secondary mullions whose section is given within that of the larger one. The three round members of the central mullion are carried out in the larger tracery which branches from it, while the single round only adorns the tracery of the sub-order which springs

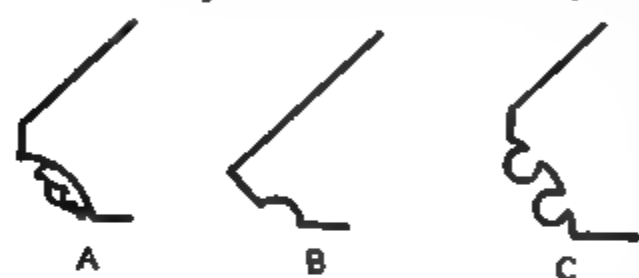


FIG. 185.

from the simpler secondary mullions. A variation of this profile occurs in the tracery of the Sainte Chapelle of St. Germer (dating from the middle of the thirteenth century), where hollow rounds

take the place of the sunk fillets of the profile C. No marked further changes were wrought in the profiles of mullions and tracery until, in the declining Gothic, sharp and multiplied arrises took the place of the rounds.

It may here be remarked that the hood-moulding does not generally occur before the thirteenth century; though in a few cases it is found in the early period—as in the choir and apse of St.-Germer-de-Fly. After 1200 it is freely employed on the outside of the building, and sometimes on internal arcades also. On the outside it has the function, though not always the profile, of a dripstone; but within its function is purely ornamental. One of the earliest instances of its external use appears in the apse of the Cathedral of Reims—where it has the profile A (Fig. 185), the hollow being adorned at intervals with bosses of foliate carving. In the clerestory of Amiens, the sloping top becomes steeper, and the hollow is diminished, as at B. In the Sainte Chapelle of St. Germer it is developed as at C, and is surmounted by an open ornamental gable.

We have now examined the most characteristic profiles of the several Gothic members in which mouldings occur, and it will be seen that during the best period of the style they are

simple and rational in character and elegant in effect. Broadly rounded mouldings are pleasantly contrasted with equally broad hollows and flat surfaces, and are effectively set off by a few fillets and deep lines of emphatic shade. All redundance of parts and excessive sharpness of accent are avoided until the period of decadence — which, however, begins before the close of the thirteenth century.. The finest Gothic profiles are those of the latter part of the twelfth century and the beginning of the century following.

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## CHAPTER XI

### PROFILES OF THE TWELFTH AND THIRTEENTH CENTURIES IN ENGLAND

THE pointed architecture of England of the twelfth and thirteenth centuries differs from the Gothic of France in the profiles of its capitals, bases, and string-courses no less than in its larger structural features. This difference is manifest from the earliest times, and is constantly shown except in cases where, as at Canterbury, French workmanship prevailed.

We may begin, as in the preceding chapter, with the profiles of capitals. Among the earliest and finest capitals of England are those of the east transept of the Cathedral of Lincoln; and the best of these are in the triforium of the north arm (Fig. 186). It will be seen that this type of capital is very different from the French examples; but, while it lacks the qualities which distinguish the French types, it has, nevertheless, a very beautiful and appropriate form. Its general shape is well adapted to its function of preparing the slender shaft to carry a bulky load. The Corinthianesque outline of its bell is at once graceful and functionally expressive; and its simple foliate ornamentation, clasping the lower member of the round abacus, is designed with subtle art. The round abacus, a form which agrees with the arch section employed, presents no overhanging angles requiring support from crockets; and the designer has accordingly invented an entirely new ornamental scheme in harmony with these conditions. The same general type is carried out, with many beautiful minor variations, in most of the capitals of Bishop Hugh's choir and transept, especially in the richly designed wall arcades of the ground story. But associated with them are a few others of a different character, which suggest the coöperation of a different school of workmen. Of these Fig. 187 is an illustration. In this capital we have a curious and significant combination of incongruous elements. The round abacus, which is a characteristic

feature of Norman and Anglo-Norman design, is joined to a bell of thoroughly French Gothic type. A glance at Fig. 149, p. 311, will illustrate this. It will be seen that the crockets here employed are altogether French in character and arrange-

FIG. 186. — Lincoln.

ment, and have the appearance of having been wrought by French workmen, who, being required to conform to the general Anglo-Norman scheme in employing the round abacus, produced a form of capital which has not the merits of either the French or the Anglo-Norman types. Associated with the round abacus the crockets are meaningless and spoil the general out-

line, while the abacus, which is too small for good proportion, has no appearance of organic connection with the bell. The total result is awkward and unsatisfactory, notwithstanding that the crockets themselves are very beautiful, and have the refinement of execution which belongs to the finest French work, a refinement that is rarely approached in the works of Anglo-Norman carvers.

FIG. 187. — Lincoln.

Capitals of this mixed character are curiously interspersed with those of the local type in nearly all of the arcades of this early portion of Lincoln Cathedral. In the south triforium they are used exclusively in the first and second bays counting from the western transept. Other still different capitals occur in these arcades. They have crockets arranged as in the preceding examples, but they differ from them in design and execution. They appear to be English, or Anglo-Norman, imitations of the

French work. One of them (Fig. 188), from an early portion of the west transept, will serve for illustration. The general outline is better than that of Fig. 187, but the details of design and execution are not like French work—being less finished and

FIG. 188. — Lincoln.

having peculiar elements which will be considered, in another chapter, in connection with the subject of foliate sculpture. Figure 189 exhibits another type of frequent occurrence. It is a modification of the type shown in Fig. 186, p. 339, but hardly an improvement on that beautiful early form. The ornamentation

is redundant, and has the effect of a mere wreath encircling the bell, whose profile is largely hidden. Yet as compared with later capitals in England, it has merits. The ornamentation in itself is architectural and beautiful, and the general outline, though it has lost the Corinthianesque character, is compact and not ungraceful.

FIG. 189. — Lincoln.

Before the middle of the thirteenth century the tendency to redundance of ornament became strong; and this, quite as much as the round abacus, characterizes the later forms of so-called early English capitals. The profile of the bell is in great part lost to view in such capitals, as may be seen in Fig. 190, a

group of capitals from the arcade of the north choir screen of Lincoln. The crockets here, reaching far out from the bell, have no function, or functional expression; and, although their lines have much abstract ornamental value, they lack the monumental restraint, and the quiet beauty, of the best art.

Of still different character are the nearly contemporaneous capitals (Fig. 191) of the transept and eastern end of the nave of

FIG. 190. — Lincoln.

Wells Cathedral. These are peculiar, and appear to be the work of a local school, whose influence is noticeable at Glastonbury also. They differ widely from anything at Lincoln, and, while in many points resembling French work, they do not appear to be wholly French. The polygonal abacus, the adjustment of the crockets, and the details of execution are conspicuously French; but the general form and excessive projection of the crockets are Anglo-Norman characteristics. The profile, irrespective of the crockets, is distinctly French.



A very common type of capital in England in the thirteenth century is the plain moulded capital (Fig. 192). This capital has no foliate ornamentation whatever, but is adorned with a series of mouldings only, and looks as if it might have been turned out on a lathe. It is extensively used in many of the most important monuments of the so-called Early English style, as in Westminster Abbey, Salisbury, Beverley, and Southwell. It is rarely a capital of good profile, and its effect is bald and monotonous in the extreme.

FIG. 191. — Wells.

As a general rule, nearly all of the mouldings of the abacus in England are rounded. The upper member, whether in the interior or on the exterior of the building, has more or less of the form of the drip mould, as at A (Fig. 193), from the arcade of the interior of the west transept of Lincoln. B, in the same figure, is the profile of the capital (Fig. 190) from the choir screen of Lincoln, while exceptional profiles, apparently showing French influence, are C and D, from Glastonbury and Wells respectively.

The profiles of bases in the early pointed architecture of

England are often particularly fine. In many cases they somewhat resemble those of the French Gothic, though they are generally made up of a larger number of mouldings, and these mouldings rarely have the subtle forms of the finest French models. The profile A (Fig. 194), from the choir of Lincoln, is characteristic of the best. Such profiles give a very spreading form to the base, and their hollows are deeply cut, giving strong lines of shade. The profile B, in the same figure, from the nave, and C, from the presbytery of the same cathedral, illustrate more simple types, which are often of considerable elegance. But base profiles of this fine character are not of constant occurrence. Such poor ones as A (Fig. 195), from the choir of Ely, B and C, from the triforium of the nave of Lincoln, D, from the triforium of the choir of Hexham, and E, from the clerestory of the choir of Whitby, are not uncommon.



FIG. 192. — Beverley.

The square plinth, like the square abacus, is unusual in England. The whole base is commonly round in plan, and of the superimposed courses of which the plinth is made up, one

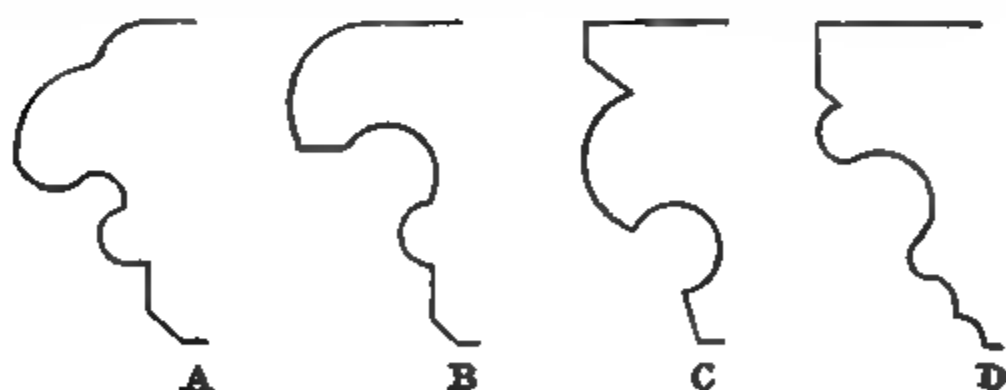


FIG. 193.

or more are usually moulded, giving a profile, as at A (Fig. 196), from the aisle of the choir of Lincoln, or B, in the same figure, from the choir of the Temple Church in London. The square plinth being absent, there was, of course, no place for the *griffe*, and thus the base lacks the variety, and the expression of firm

foothold, which give so much character and beauty to the bases of the French Gothic. In a few instances, however, the square plinth occurs. In the French work of the choir of Canterbury

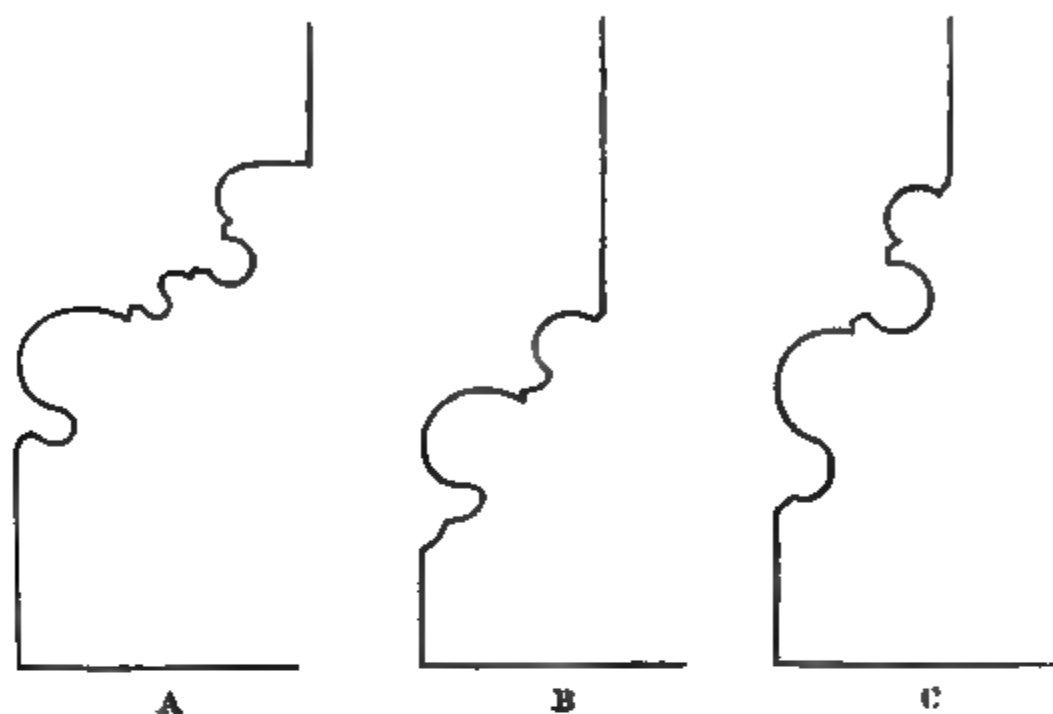


FIG. 194.

it is found, of course, and the *griffe* occurs with it. In the north porch of Wells is a shafted arcade, whose bases rest on a

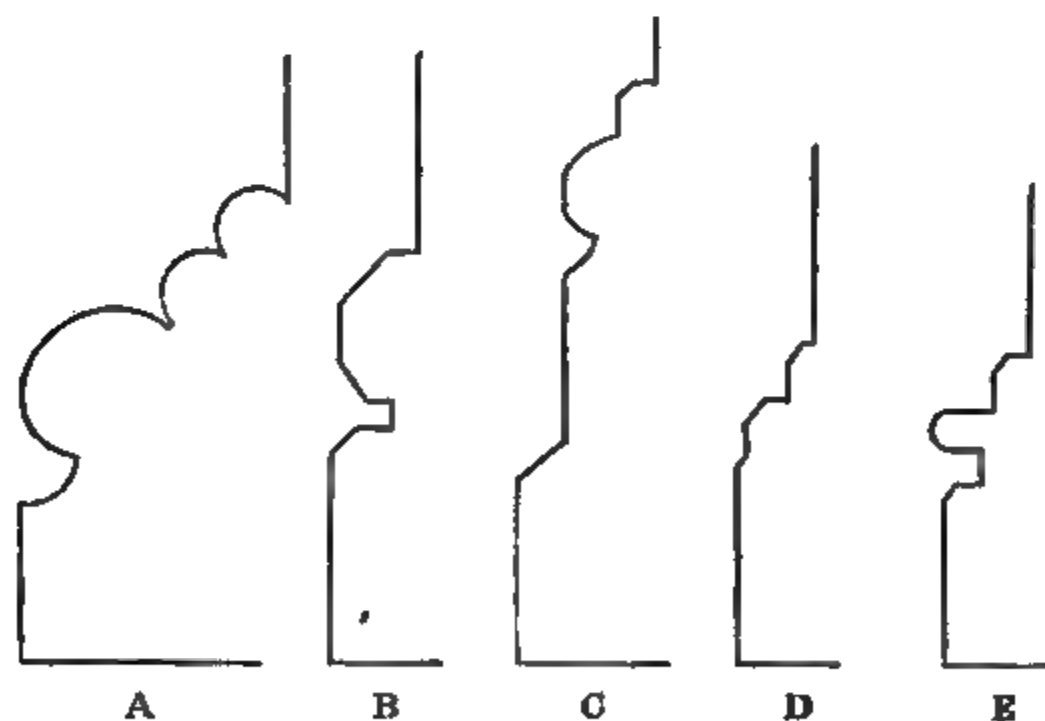


FIG. 195.

ledge which is above the eye level. These bases have square plinths, and the *griffes* with which they are furnished are appropriately placed on the under side of the torus, as in Fig. 197.

The characteristic profile of the string-course in this architecture is made up almost exclusively of curves, as at A (Fig. 198), from the choir of Lincoln. The principle of the dripstone is developed partially, but not with strict logic nor with much beauty of line. The straight, steep watershed does not generally occur, nor the sharp-edged fillet. Often, even in important buildings, the upper member has nothing of the dripstone profile. At Salisbury, for instance, the external string at the

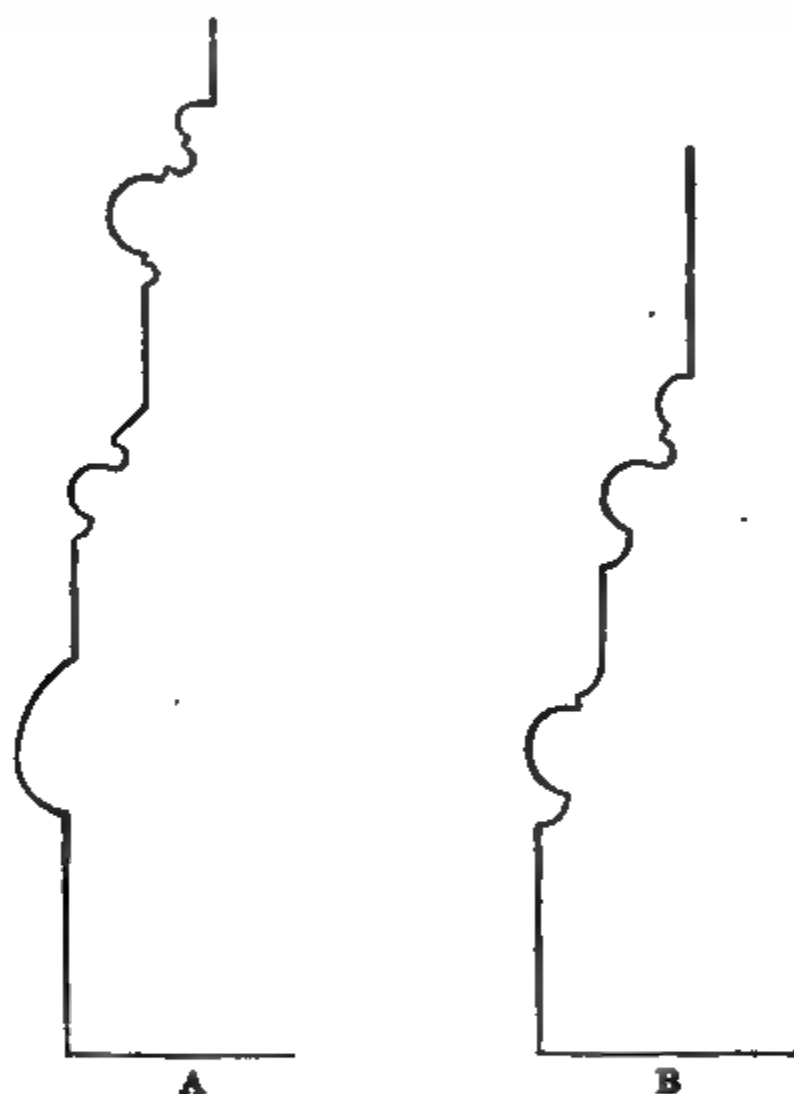


FIG. 196.

level of the aisle window sills has the ungraceful and meaningless profile shown in Fig. 199, where the upper member is a heavy half-round. The best English string profile is that of the so-called beak moulding, B (Fig. 198), from Glastonbury. An approach to the French Gothic string profile is sometimes found in early work, as in the profile C, in the same figure, from the clerestory of the choir of Lincoln, and at Wells the curious profile D occurs, the upper part of which is like that of a French string.

In English pointed architecture during the whole of the

thirteenth century, the corbel-table is often introduced beneath the string. It occurs in Salisbury, in the Presbytery of Lincoln, and in many other equally advanced buildings.

Internal strings do not much differ from those of the exterior. A characteristic example is that shown at E (Fig. 198), from the aisle of the choir of Lincoln; and another characteristic form is shown at F, from the triforium string of the same choir.

In arch mouldings the Anglo-Norman architects displayed a singular predilection for a multiplicity of members varying in profile and separated by deep hollows. In this way a considerable effect of lightness was given to arches that were really very massive. Even in the purely Norman buildings, such as



FIG. 197.

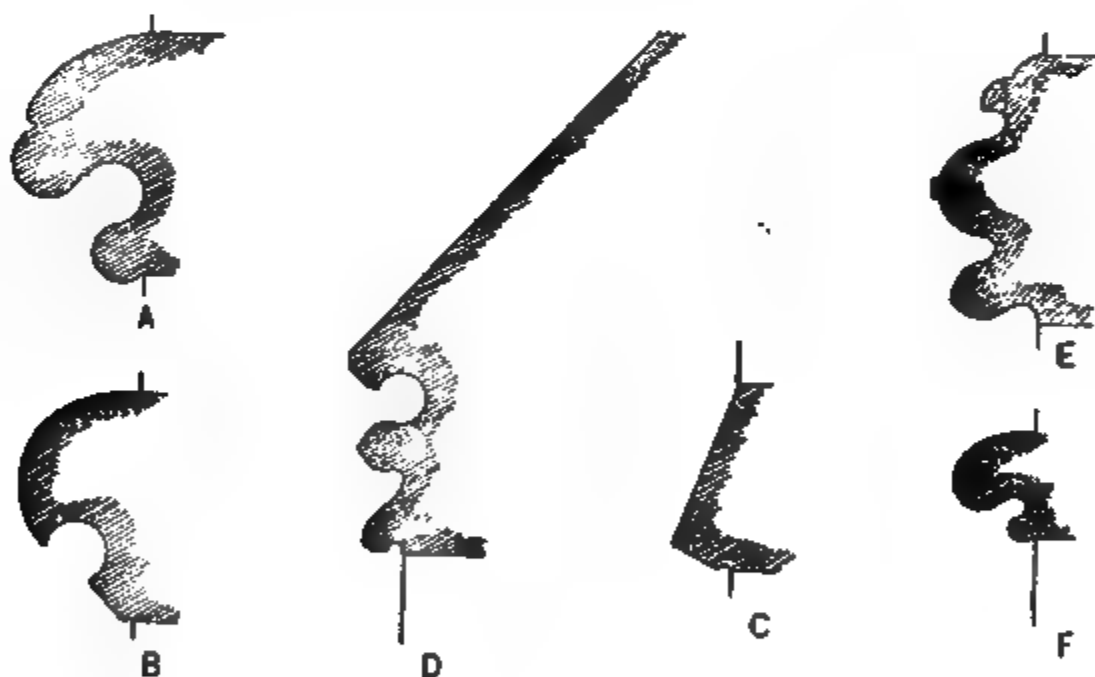


FIG. 198.

St. Albans, Norwich, Romsey, Ely, Peterborough, and many others, indications of this tendency are shown by the general employment of at least three orders in the main arcades, and each of these orders is frequently subdivided into numerous mouldings. This multiplication of orders naturally led to the rounded impost section to which the round abacus was not seldom adjusted with good effect, as at Southwell (Fig. 200). And in the early pointed style the rounded section was soon

given to each separate order by the peculiar arrangement of the rounds, hollows, and fillets into which these orders were subdivided. An early instance, among many others, occurs in the great archivolts of Malmesbury Abbey (Fig. 201). Another peculiarity is noticeable here which was also retained and amplified in the arch profiles of the early English architects, that, namely, of the depression between the rounds of the soffit of the sub-order. Both of these characteristics are developed in the



FIG. 199.

FIG. 200.

archivolts of St. Mary's Church, New Shoreham, and are still further amplified in the pier arches of the choir of Lincoln (Fig. 202).<sup>1</sup> In the nave of the same building the archivolts become richer by the addition of a third order; and each order here assumes an almost perfectly segmental section. Equally elaborate archivolts of the same character are found in the nave of Salisbury.

<sup>1</sup> I would emphasize the fact of the resemblance of the archivolt profiles of the choir of Lincoln to those of the nave of Malmesbury, because it has been erroneously affirmed by Mr. Parker and others that the choir of Lincoln is a purely English work in which no traces of Norman influence appear.

The variations of arch profiles which characterize the early pointed architecture of England are practically endless; but they need not be considered further. They are often made up

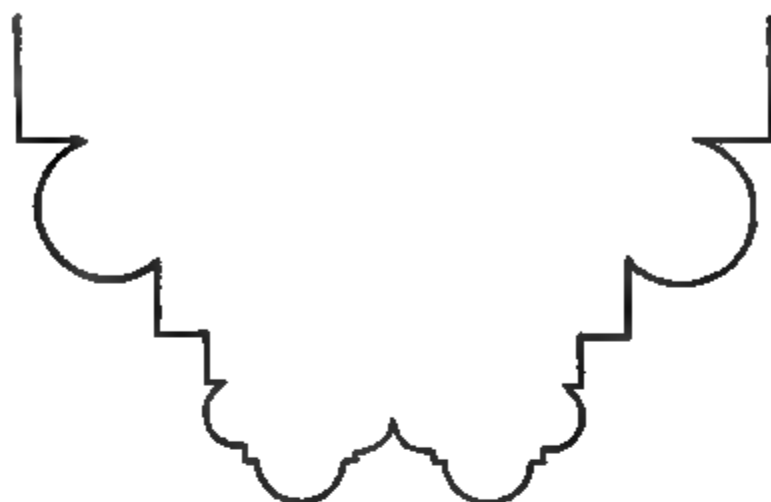


FIG. 201.

of good parts, skilfully contrasted, but they are almost always over-elaborated. The minute subdivisions and the frequent introduction of narrow fillets, which became constant by the

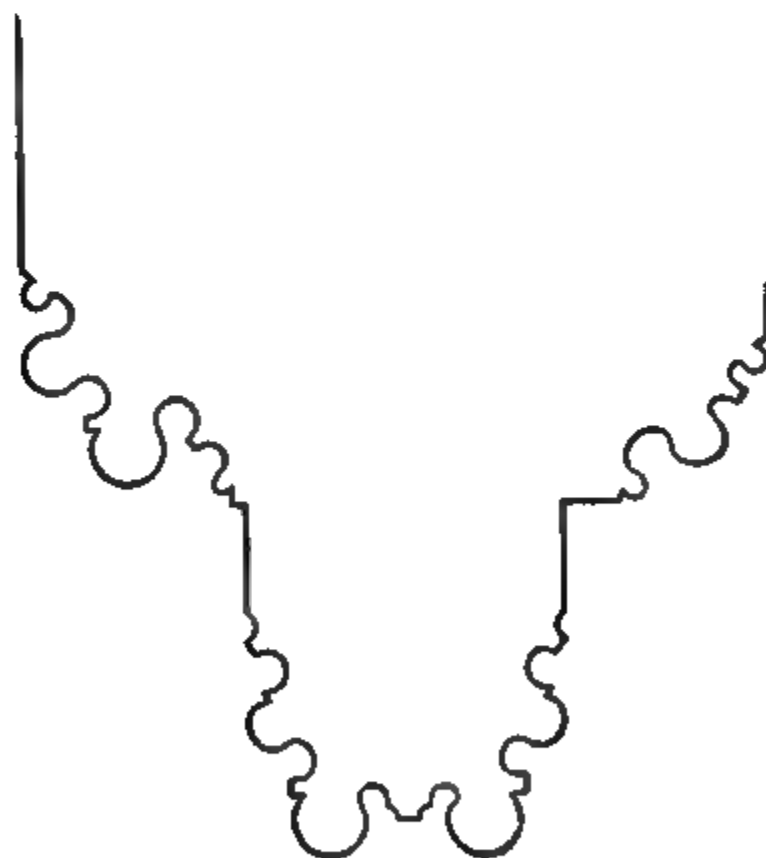


FIG. 202.

middle of the thirteenth century, produce a hard linear effect. The best English profiling is that of the earliest pointed monuments. The mouldings of Bishop Hugh's choir of Lincoln, for instance, contrast agreeably, in their greater simplicity, with the

redundant profiling of the arcades of the presbytery of the same church.

The profiles of vault ribs are not materially different from those of the archivolts. The double rounds, separated by a hollow, on the soffit are common. In the choir of Lincoln the principal ribs of the aisle vaults are almost identical in section with the sub-orders of the pier arches. In diagonals the profile (Fig. 203), from the choir of Lincoln, is characteristic. The lower member of this profile resembles the corresponding member of the rib profiles of Amiens and Beauvais (Fig. 181, p. 334); but the details are different — having the multiplicity of parts, the deep hollows, and the numerous fillets already spoken of as characteristic of Anglo-Norman work. The

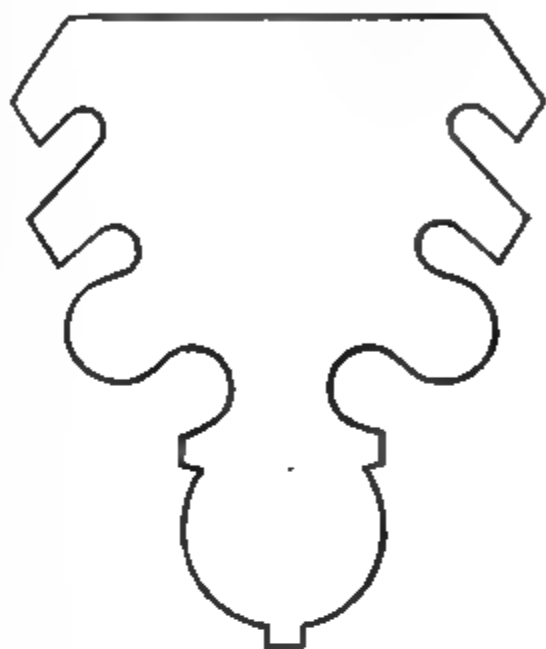


FIG. 203.

rectangular section of the fillet on the bottom of the lower round is characteristic of Anglo-Norman treatment, and is in contrast with the gentle curves of the sides of the French fillets. Another noticeable peculiarity of the English rib profiles is that of the joining of rounds and hollows by continuous curves, whereas in France these curves intersect sharply, giving

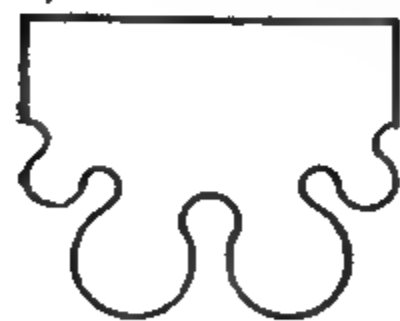


FIG. 204.

accent to the mouldings. The fillets on the lower rounds are sometimes curved on the sides in England as well as in France — as in Fig. 122, p. 223, profiles from the Presbytery of Lincoln. The continuity of the reversed curves is here again noticeable in the joining of the rounds and hollows. This treatment ap-

pears to be of Norman origin, and is frequently met with in the profiling of the early Norman Gothic of the continent, as in Fig. 204, a transverse rib from the vaulting of the apsidal aisle of Lisieux.

Thus a careful comparison of Anglo-Norman profiles with those of the French Gothic architects shows that they differ one



from the other as much as do the respective structural forms. The Anglo-Norman genius possessed many admirable qualities, but it was distinctly inferior to the French in fine and original artistic aptitudes. Where the French architect kept his orders few, and his arch mouldings broad and effective, the Anglo-Norman multiplied his orders, and subdivided them into numerous narrow mouldings. And he did this not merely in consequence of a predilection for multiplicity of parts, but largely because of the nature of his structural system. An arcade which carried a very heavy wall required at least three orders of archivolts to give it any lightness of effect. The lightness of the French Gothic style was the natural result of its peculiar constructive system.

We need not consider the profiles of mullions and tracery in England, because, as before remarked (p. 226), the openings of the so-called early English style were generally simple lancets without dividing members. When, during the second half of the thirteenth century, great openings with tracery came into vogue, the profiling, like the tracery itself, followed, for the most part, that of the Gothic of France, though minor peculiarities of detail, corresponding to those which we have noticed in the profiling of vault ribs, sometimes occur.

## CHAPTER XII

### PROFILES OF THE TWELFTH AND THIRTEENTH CENTURIES IN GERMANY, ITALY, AND SPAIN

No noteworthy changes from Romanesque models appear to have been made in the profilings of German churches during the twelfth century. In the capitals of the pointed buildings of the early thirteenth century the influence of the cushion-shaped capital of the Rhemish Romanesque architecture is often noticeable. In such capitals the lower part of the bell usually has

FIG. 205. — Magdeburg.

FIG. 206. — Heisterbach.

something of the Corinthianesque form, as those of the nave of Magdeburg (Fig. 205). Capitals of similar form are, indeed, frequent in the transitional Gothic of France, as in Senlis and many other buildings of the middle of the twelfth century. But in Germany they occur in monuments that were constructed more than half a century later. By the second quarter of the thirteenth century the Corinthianesque Gothic type of France was introduced, and many beautiful examples of it occur in Bonn, in Limburg on the Lahn, in St. Gereon of Cologne, and elsewhere. In the apse of Heisterbach capitals of the first type just mentioned assume very singular and curiously inelegant shapes, as in Fig. 206. These are associated with others

of more graceful outlines, while, in the upper arcade of the same apse are capitals of wholly different character, having round abaci and plain mouldings, substantially like those which are common in the early pointed architecture of England. Before 1250 the profiling of capitals becomes more peculiarly German. The bell (in large pier capitals) often becomes lower in proportion to its diameter; and while the concaved outline is retained, this outline is largely obscured by a double row of bossy leafage. The abacus, in such capitals, is round in plan, and its

profiling is made up of rounded members, as in the *Liebfrauenkirche* of Trier (Fig. 128, p. 246), and in *St. Elizabeth* of Marburg. In the *Liebfrauenkirche* the smaller capitals have a more distinctly Corinthianesque form. Those of the vaulting shafts adjoining the apse are of the French Gothic type, while those of the smaller arcades have round abaci and a likeness to early English types. In some parts of the nave of Marburg the plain moulded capital again occurs. The influence of France is thus shown at this period in the forms of capitals, no less than in the larger architectural

FIG. 207. — Cologne.

features; but with a subordinate influence from England, such as from the historic relations of the two countries we might naturally expect to find.

It was not until after the middle of the thirteenth century that the most distinctly German forms of capitals were produced, examples of which are found in the choir of *Cologne Cathedral*; a monument which (though purely French, as we have seen, in its structural system) is largely German in its ornamental details. Figure 207, a capital from the triforium of this choir, affords a characteristic illustration.<sup>1</sup> Here the bell (the most beautiful part of all fine capitals) can hardly be said to exist. The shaft itself, in effect, passes up through the neck moulding and is surrounded by two zones of leafage of a dry and graceless character. Just below the abacus this shaft expands in a short curve which is almost wholly hidden by the upper zone of leafage. The pro-

<sup>1</sup> Figure 207 is taken from Boissérée.

filing of the abacus is far removed in character from that of French models, and is singularly hard and poor. In the naves of Strasburg and Freiburg, French Gothic types are again reproduced, though in some cases, as in the vaulting capitals of Freiburg, with a wide departure from the grace and beauty of the best French designs.

Bases, like capitals, in the early part of the thirteenth century are, in Germany, substantially of the early French Gothic form, in some cases with the angle spur, as in Bonn, and in others without this feature, as in Limburg. In many of these bases the profiling has a degree of beauty almost equal to that of French work, as in the triforium of Limburg; but the extreme refinement of contour which is found in the finest Gothic bases of France is hardly ever to be met with in Germany. Often in the later German pointed buildings the base profiles are noticeably poor, as in the nave piers of Marburg, where a single ogee moulding takes the place of the great and little tori with the scotia and fillets of the true Gothic base.

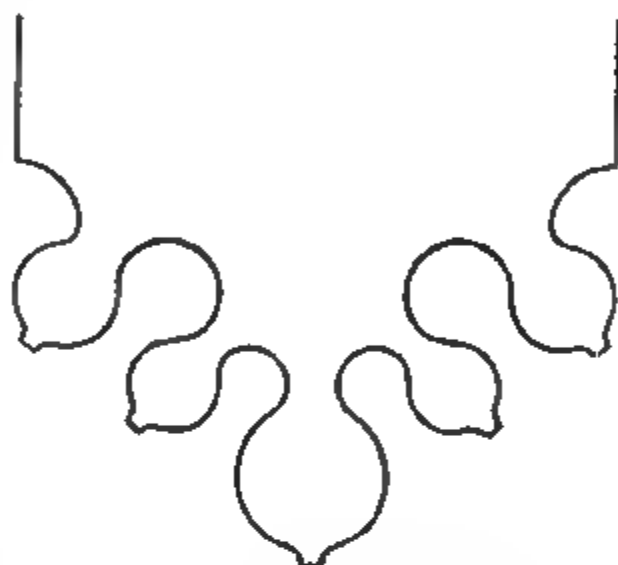


FIG. 208.

The same general likeness to French models is found in the profiles of archivolts, vault ribs, string courses, and mullions, until a very late period, when the subdivisions of mouldings are greatly increased, and sharp arrises take the place of rounded forms, as in the elaborate mouldings of the west end of Cologne. But before this latter condition is reached the pier archivolts and other kindred members often have much the same character as those of the later Anglo-Norman architecture, — the salient members having fillets, and being separated one from another by excessively deep hollows, as in Fig. 208, the profile of a pier archivolt of Cologne.

The profiles of the pointed architecture of Italy are very diverse in character. No generally recognized principles seem to have governed the designers in their production at any period. In many cases, especially in the capitals and bases of the early

Cistercian and other buildings which have the most of Gothic character, the French Gothic profiles are closely reproduced, while often, at the same time, they are widely departed from, as in the nave of St. Francis of Bologna, where the capitals of the octagonal piers are low in proportion to their height, and thus resemble those of such German monuments as the *Liebfrauenkirche* of Trier. In his more independent productions in this field the Italian designer displays little inventive aptitude, but follows a capricious fancy with little regard to functional needs,

FIG. 209. — Sta. Maria Novella.

and not seldom in violation of all principles of grace and beauty. As might be expected, his native classic bent displays itself more or less constantly, though in the pointed architecture of Italy neither Gothic nor classic principles are ever consistently adhered to.

For illustration of the types of capitals and bases, which in the native pointed art have the most of Gothic form, we may take those of the nave of Sta. Maria Novella in Florence (Fig. 209). In general form and proportions these capitals lack the beauty of French models; and they have little elegance of outline.

A tendency, which became strong in Italy, to adorn the bell with two continuous rows of leafage is already established. That beautiful and appropriate feature, the crocket, is not included in the design, there is no continuous curve from the necking to the abacus, and the capitals, while not bad in the total effect of the group, are devoid of the charm of the best French examples. A few capitals in this nave have some elegance of form; but they incline as much to classic as to Gothic types. In the Church of Sta. Croce the octagonal columns have capitals of much taller proportions, and many of them have considerable beauty. The loads which they carry have, however, little more bulk than the columns themselves, and thus they have little of the distinctively Gothic function or form adapted to that function. As I have before remarked (p. 274), the capitals of the nave of the Cathedral of Florence are hardly capitals at all, but are rather ornamental bands of leafage following the section of the compound pier. The load is here, as we have also before seen, of precisely the same size and section as the pier itself; and the capital, such as it is, has no profile which departs from the upright straight lines of the pier except in the mouldings of the abacus.

Italian bases are almost as various in form as the capitals, and are, except in the earliest buildings, equally unlike Gothic in their profiles. The profile A, Fig. 210, from a pier of the nave of Sta. Maria Novella, closely resembles early French models, and bases of a more developed Gothic character sometimes occur, especially in connection with small shafts, as in the wall arcades of St. Francis of Assisi. But in the distinctly native pointed Italian architecture the profiles of bases are very different. The profile B in the same figure, for instance, from the Cathedral of Florence, is almost as poor as the capital of the same pier which we have just noticed. Like the capital it consists of little more than a series of mouldings surrounding the pier and following its section. No well-formed footing for the body of the pier is provided. The straight line, *ab*, in this profile does, indeed, project a little beyond the face of the pier, but the enlargement is too slight to be readily appreciated by the eye. In the profile C from Sta. Croce, this straight line is brought farther out, and the character of a base is thus more fully attained; but the very salient portion at the bottom is an awkward and ungraceful feature.

Archivolts, and transverse vaulting ribs, in Italian pointed architecture, are commonly of plain square section without subdivisions or adornments of any kind. They may, however, be, as is Sta. Croce of Florence, of two orders of very slight projection, or they may have a plain fillet following the extrados, as in the cathedral of the same city. Nothing like the moulded sections of these members is common except in early buildings

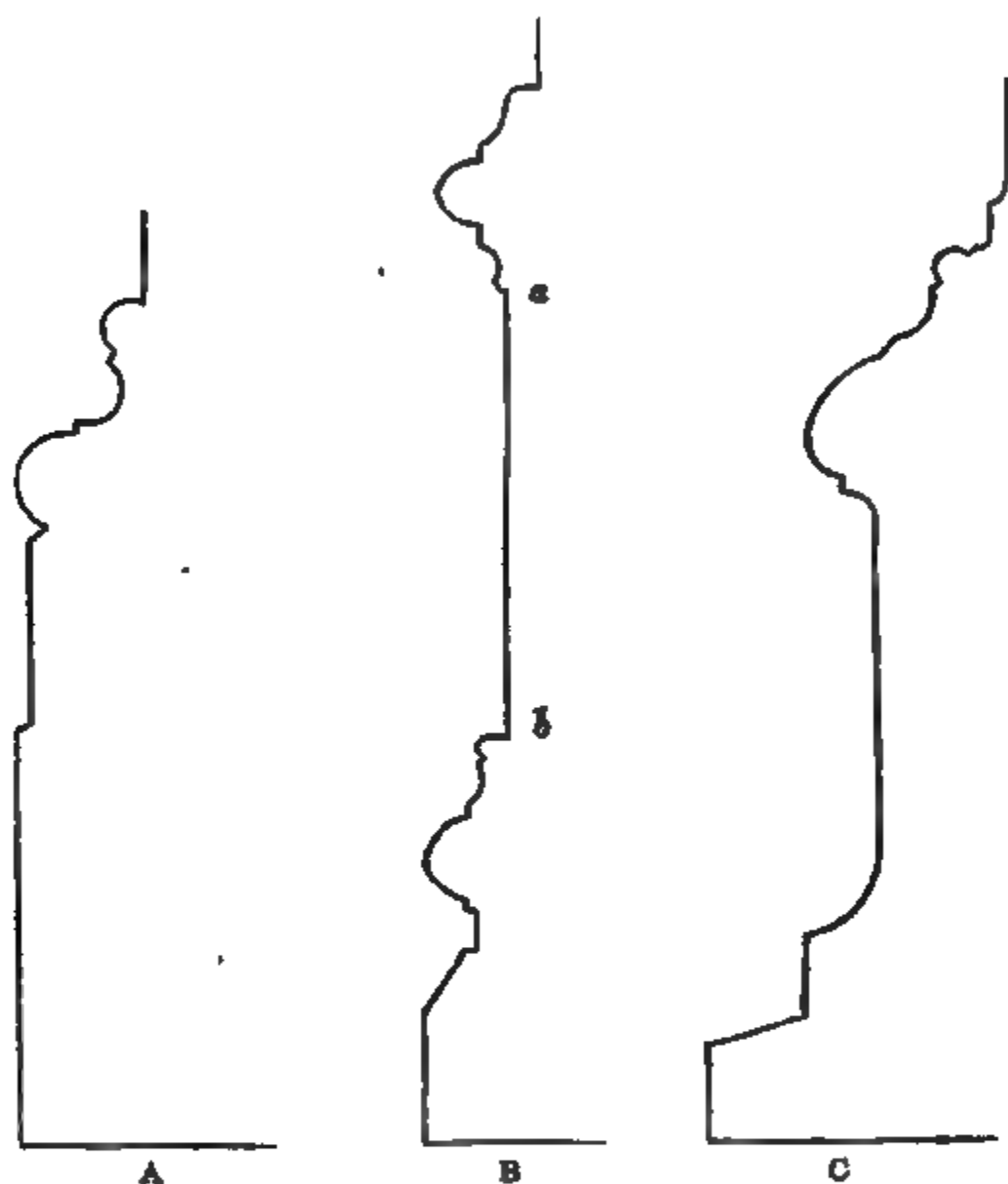


FIG. 210.

where transalpine influences have prevailed, as in the transverse ribs of St. Andrea of Vercelli, which have French Gothic profiles. Diagonal ribs are commonly bevelled, but they are rarely otherwise adorned. The diagonal ribs of the Cathedral of Florence, however, have the section shown in Fig. 211, where the introduction of the *cyma recta* is one of the many indications, noticeable in the Italian art of the Middle Ages, of the hold that classic elements of design retained on the minds of the builders.

Outside strings and cornices almost invariably exhibit the classic profiling with little essential modification. Anything like the Gothic dripstone is rare in Italy. The upper surfaces of the outside mouldings are in some cases bevelled, as in the Cathedral of Florence, but more often they are flat, even in buildings that have most Gothic character, as in St. Francis of Assisi. Frequently, as in Florence Cathedral, the main cornice is carried on corbels, and is made to support a low parapet. In the profiling of all such features classic and Romanesque characteristics predominate.

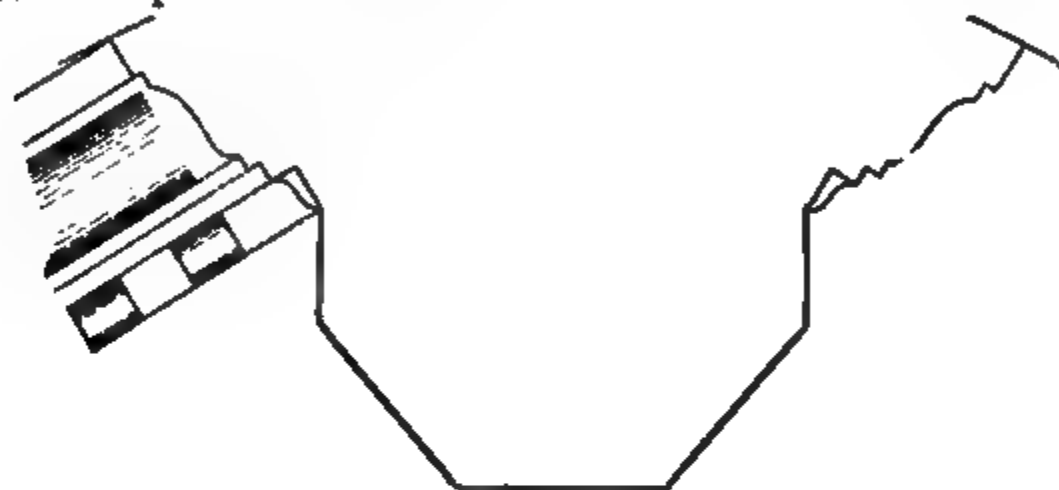


FIG. 211.

The dependence of Spain on France was as great in respect to profiling as we have seen that it was in matters of general design and construction. In early pointed buildings, like the old Cathedral of Salamanca, the capitals and bases are purely French in aspect, and must, in most cases, it would seem, have been wrought by French workmen. This continues to be the case until after about 1220, when, in the Cathedral of Burgos and elsewhere, an English influence seems to make its appearance in the substitution of the round for the square abacus, as well as in some other details. Nothing peculiar, that can be considered as the result of a native artistic influence, appears in these details at any period of pointed design in Spain. In vault ribs and archivolts a peculiar massiveness is noticeable, as before remarked (p. 284), in early buildings; and in such buildings, as in Salamanca, transverse ribs and the sub-orders of archivolts are, as in Italy, generally square without any mouldings. In respect to the general imitation of French models outside mouldings form no exception to those of the interior. So little is there in the profilings of Spain that is in any way peculiar to the country that no detailed consideration of them is necessary.



## CHAPTER XIII

### GOTHIC SCULPTURE IN FRANCE

THE fact that a remarkable school of sculpture — a school far in advance of all others of the Middle Ages — was developed during the twelfth century, in connection with the Gothic architecture of the Ile-de-France, has not, hitherto, been duly recognized by students of the history of the Fine Arts. Modern writers, following Vasari, have so generally regarded Italy as the country of the earliest revival of the arts, and have so fixed in our minds the names of Pisano and Cimabue as the pioneers of the revival, that we are naturally unprepared, so far as our notions have been derived from the literature of the subject, to find that a no less remarkable revival had place in the north of Europe a hundred years before the great Italian awakening.

Attention has been called by Flaxman,<sup>1</sup> and more recently by Cockerell,<sup>2</sup> to the fact that the west façade of Wells Cathedral stands as a witness to the existence of an advanced school of sculpture in Northern Europe contemporaneous with the art of Niccola Pisano; but the significance of this fact has made little impression. And neither Flaxman nor Cockerell appears to have recognized the further fact that a century before the date of the sculptures of Wells, a school of sculpture was in existence across the channel which had produced works at Corbeil, at St. Denis, and at Chartres of still greater merit.

The earliest schools of sculpture on this side of the Alps were those of Southern Gaul, where longer than elsewhere the ancient Roman civilization had retained its life and vigour; and where, as we have already seen, the soil was thickly covered with Roman monuments. Among these were vast numbers of sculptures which, coarse and inferior as they for the most part

<sup>1</sup> Lectures on Sculpture. London, 1829.

<sup>2</sup> Iconography of the west front of Wells Cathedral, Oxford and London, 1851.

were, afforded models, in some measure characteristic, of the great art of antiquity. Upon such models the mediæval sculptors of this region naturally formed their style, just as the constructors formed their architectural system on that of the extant Roman buildings.

But the productions of the mediæval sculptors of Southern Gaul abundantly show that other sources of instruction and inspiration were also open to them in the works of Byzantine art—an art which, in its best forms, was of a far more admirable and potent character than the decadent provincial Roman art.

The principal examples of Byzantine design offered as models to the artists of the West were the manuscript illuminations and the carvings in ivory, large numbers of which were possessed by the great monastic houses of the early Middle

FIG. 212.

Ages, most of which were active centres of artistic culture and production. Of these manuscripts and carvings many are still preserved in the National Library of Paris and in other great

European collections. The miniatures with which the pages of these manuscripts are profusely adorned are worthy of special attention. They afford a notion of Byzantine art very different from that which is derived from the writings of Vasari, or from the formalized productions of the school of Mount Athos, and are often superior in design to the splendid mosaics of Venice and Ravenna. They exhibit little of the stiffness, inelegance, and semibarbaric rudeness that are com-

FIG. 213.

monly conceived to be characteristic of Byzantine work. They frequently display a remarkable degree of grace, action, and expression. Figures 212 and 213, from a Byzantine manuscript of the tenth century,<sup>1</sup> will convey some idea of their character,

<sup>1</sup> Ms. No. 64, National Library, Paris.

though much of their beauty is lost by the absence of the colouring and the subtle refinement of their microscopic finish. The student of Greek art will not fail to perceive in these diminutive figures<sup>1</sup> many qualities that are plainly of Hellenic origin. The composition of lines and the casting of draperies are closely similar to those of the finest Greek coins and other reliefs. In such works as these were some of the fundamental principles of ancient Greek art preserved to the Middle Ages; and their influence upon the early art of Southern and Central Gaul, and afterwards upon the Gothic schools of the North, will, upon comparison, become apparent.

The degree of classic feeling and skill in design which were sometimes reached in these early schools of Gaul, and which were largely due to the Byzantine influence, is shown, for instance, in the sculptures upon the lintel of the Church of Notre Dame du Port, Clermont-Ferrand, which date from the close of the eleventh century, and of which Fig. 214 represents a single figure of exceptional beauty. The similarity of this early mediæval art of France to ancient Greek art is, in some cases, even more striking, and is often such as to almost compel belief that there must have been some more direct transmission of principles and methods of design than has been supposed. The similarity of treatment is not seldom surprising. The well-known convention in the treatment of hair in archaic and early Greek sculpture of arranging it in parallel wavy tresses brought down from the crown of the head and terminated in a zone of formal curls about the forehead, as in Fig. 215, the head of the Apollo of the Temple of Zeus at Olympia, for instance, is reproduced completely in the head (Fig. 216) from the tympanum of the portal of Moissac. In so far as this peculiarity is concerned the two works might almost appear to be products of one age and one school. It is noticeable, also, that this peculiarity is, in both schools, most marked in early works. In archaic Greek art such conventions are very pronounced. The two characteristics of the treatment of hair just noticed are not, indeed, always found in archaic Greek sculpture; other equally conventional modes of arrangement occur. The zone of formal curls is sometimes omitted, and the hair is often parted with wavy tresses falling down on either side of the forehead and

<sup>1</sup> These figures are of about the same size as the originals.

temples, or otherwise varied; but whatever the arrangement of locks and tresses may be, a similar regularity of details, and the same simplified and conventional treatment, are practically constant. The Greek sculptor, even of an advanced period, seems to have felt that stone does not lend itself to any imitative rendering of hair, and he took evident pleasure in making it emphatically conventional. The monumental and ornamental value of this treatment was also, it is clear, appreciated by

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FIG. 214. — Notre Dame du Port.

him; and hence it does not disappear until the period of the decadence of Greek art.

With a few exceptions, as in the case of the school of Toulouse,<sup>1</sup> to which the sculptures of Moissac (of which the head, Fig. 216, is an example) belong, the schools of sculpture that arose south of the Loire were not progressive schools. They rarely displayed any original powers, or any fresh artistic

<sup>1</sup> Cf. Viollet-le-Duc, s.v. *Sculpture*, pp. 125, 126.

purpose. They were traditional schools without vitality, they gave birth to no important developments, and, although for a time their activity was vigorous, after the twelfth century they passed into decline.

North of the Loire, however, the case was different. In Burgundy the monastic carvers, by the beginning of the twelfth century, produced works which, though still not freed from the limitations of primitive artistic conditions, gave evidence of a new impulse guided by a fresh observation of nature. Of this

FIG. 215. — Olympia.

sculpture the Abbey Church of Vézelay and the Cathedral of Autun afford, in the jambs and tympanums of their portals, characteristic examples. These are, indeed, curious, and almost barbaric in general aspect; but they are also remarkable for movement and expression, as well as for a marked survival of classic qualities of composition. M. Viollet-le-Duc has called attention<sup>1</sup> to two figures of apostles carved on one of the jambs of the portal of Vézelay. They appear engaged in animated conversation, and their gestures are finely caught from nature. Among the smaller figures of the tympanum above these are

<sup>1</sup> *S.v. Sculpture*, pp. 113, 114.

some of surprising freedom of action and truth of form, though archaic conventions are still conspicuous.

The works of these early schools of the South and of Burgundy, together with those examples of Byzantine art that were common in the monastic libraries, appear to have constituted the chief sources of stimulus and guidance open to the early sculptors of the Ile-de-France, whose works soon surpassed in excellence all that had been previously done since the decline of the ancient schools of Greece. In the Ile-de-France the con-

FIG. 216. — Moissac.

ditions for the growth of a school of sculpture were, by the beginning of the twelfth century, exceptionally good. Not only was the race itself, as we have before noticed, peculiarly well fitted for artistic pursuits, and the conditions of climate favourable, but the geological formation of the country was such as to meet all the requirements of this new art. As Greece had her Paros and Pentelicus, and Italy had her Carrara, so France had, in the basins of the Seine and the Oise, her beds of *lilas cliquant*, a stone of fine grain and strong substance, easily cut and suitable for delicate carving.

Of figure sculpture in the Ile-de-France we have few examples of an earlier date than the second quarter of the twelfth century. But from about 1140 remains are extant which show, together with the imperfections peculiar to an immature art, a grace and mastery of design, a truth and tenderness of sentiment, and a fineness and precision of chiselling, that are unparalleled in any other schools save those of ancient Greece and of Italy in the fifteenth century. Conspicuous among the early works of this most noble school are the statues of the north transept of the Church of St. Denis. They are life-sized figures of kings, and are ranged against the shafts of the jambs on either side of the portal. These statues possess merits never before attained in Northern Europe; though at first sight they may not impress the beholder as much superior to the early works that had been produced elsewhere in the North. On attentive examination, however, their remarkable qualities will be apparent to a discriminating and appreciative eye. If they be compared with the works of the sculptors of Southern Gaul,—as, for instance, with the statues of the cloister of St. Trophime at Arles (Fig. 217), which are even later in date,—their superior qualities will be felt. In this example it will be noticed that, notwithstanding the fine classical casting of the draperies, there is much of the rigid effect which is noticeable in the more formal types of Byzantine art.

FIG. 217.—St. Trophime.

Traces of Byzantine convention in the treatment of the draperies are clearly marked. This is true especially on the breast, where the folds are suggested by simple incised lines on surfaces which are but very slightly mod-

elled. In the heads and hands a degree of angularity is apparent, and a tendency to model in planes, which bespeak a comparatively rude art. In the sculptures of St. Denis (Fig. 218) these defects do not appear. In the head and extremities there is no block-like treatment. The forms are modelled into the rounded surfaces of nature, the features are delicately wrought, the hair and beard, which are grandly massed, are subdivided into orderly locks in a thoroughly Greek manner; and while every part is delicately finished there is no over-elaboration, nor has any attempt been made to give the hard stone an undue look of pliancy. Yet the carver has wrought the important details with special care, — the thin, gently compressed lips, the light, parted mustache, and the well-formed chin. The drapery is as simple and well composed as is that of the figure of Arles; but it exhibits a superior grace of line, and although the work is wanting in the freedom and skill of later Gothic works, there is hardly any trace of the formal Byzantine conventions. The statue manifests a new spirit and a high order of genius. It already embodies those fundamental architectural qualities of design which distinguish Gothic sculpture.

The most splendid collection of early Gothic statues extant is that of the west front of the Cathedral of Chartres. These sculptures date from about the middle of the twelfth century; and though even more severely architectural in character than the figures of St. Denis, they have not the stiff and block-like effect of the sculptures of St. Trophime.

FIG. 218. — St. Denis.



In execution they are remarkably refined and delicate. The heads display a variety and lifelikeness that indicate a close observation of nature. Each one has an air of veracity as if it were the portrait of an individual.<sup>1</sup> The treatment of hair and beards is at once monumental and true to nature; while the draperies, though severely conventionalized and even archaic in character, are in some cases remarkably faithful in the modelling of folds, and elegant in arrangement. In short, these statues are by no means the stiff and immobile objects which an inattentive observer might fancy them to be. Their erect and formal postures, elongated proportions, and severe modelling are largely the result of deliberate architectural purpose rather than of incapacity on the part of the carvers to give them more natural freedom of movement and more developed form. This becomes evident on attentive examination. Within the limits fixed by the conditions to which he had to conform the artist has, in each case, shown great ability and skill as a lifelike and graceful designer. Take, for instance, the statue Fig. 219. Although, in common with all the others, standing erect and facing forward, the upper portions of this figure are not wholly wanting in ease and even grace. The positions of the arms are, as compared with those of Fig. 217, both natural and apparently capable of movement. The composition of lines in the head and shoulders, the easy fall of that portion of the mantle which crosses the throat, the modelling of it over the breast and arms, and the delicate rounding of the lifted hand — all bespeak artistic powers superior to those of the sculptor of Arles. The rigid restraint of the figure is apparently self-imposed in obedience to the demands

FIG. 219. — Chartres.

<sup>1</sup> Cf. M. Viollet-le-Duc, s.v. *Sculpture*, p. 118.

of its architectural connection. The rigidity of the statue of St. Trophime appears, on the other hand, to be inherent in its nature.

Contemporaneous statues like those of Chartres flank the south portal of the Cathedral of Le Mans, and several others (now at St. Denis) have been preserved from the destroyed Church of Notre Dame of Corbeil. These earliest examples of Gothic figure sculpture deserve more study than they have hitherto received. Their architectural appropriateness is most admirable, and their archaic characteristics are favourable to monumental effect. The multiplicity of narrow vertical folds in the draperies and the formal zigzags of their edges harmonize well with the architectural lines, and help to produce the effect of integral relationship with the structure. The likeness to ancient art is here surprising. The treatment of the draperies is almost identical with that of certain archaic Greek statues which have been found in the island of Delos. Though more developed in form than these early Gothic works, one of these ancient Greek statues might, if wrought in French limestone, and slightly modified in outline, stand in the west portal of Chartres without apparent lack of keeping.

It is worthy of notice that the mediæval architect in France did not, as a rule, employ the human figure in the manner of a caryatid. The ranges of statues which adorn the vast receding jambs of the portals of French churches are usually placed each against a shaft which bears the archivolt. Or if the shaft and the statue are wrought out of one stone, they are each distinctly developed enough to show that the shaft is the supporting member. To make the figure itself an architectural support would not be in accordance with the logical spirit of Gothic art.<sup>1</sup> Nor in true Gothic works are statues set in niches; for in Gothic architecture the walls are, as we have seen, reduced to a minimum both in extent and thickness, and neither walls nor buttresses contain more substance than is necessary, so that there is nothing to spare for recesses. The sheltered places sometimes occupied by statues, as in the buttresses of the

<sup>1</sup> It is true that corbels are often carved into the forms of heads and crouching figures, as at Amiens and elsewhere, but these are minor features. Exceptions occur, of course, as in the figure treated as a caryatid in the pier buttress of the nave of Reims.

Cathedral of Paris, are not in reality niches. They are not spaces hollowed out of the solid masses. They are nothing more than ornamental additions to the set-offs. The set-off in such cases has a level ledge on which the statue rests with a sheltering canopy built over it. These may be elaborated and multiplied, as in the magnificent pinnacled canopies that shelter the statues of the buttresses of Reims. The nearest approach to niches in pure Gothic occurs in the spaces between the mouldings of the archivolts of portals in which diminutive canopies are set over small statues, as in the portal of the Virgin of the Cathedral of Paris. In general it may be said that it is only in the decline of Gothic that real niches occur, as in the façades of the transepts of Paris.<sup>1</sup>

Statues in Gothic art are thus without mechanical office (except in certain positions, as in the canopies of buttresses, where their weight may be of importance in the construction); but they are so much in harmony with the construction as to seem to belong to it. In no other art has the union of structural and ornamental elements been so close and inseparable.

The Gothic statuary of the twelfth century is always severely conventional; though, as we have seen, it is not wanting in expression of life. But the artists of the early thirteenth century were able to give more freedom to their figures without materially diminishing their architectural value. Before we pass to the consideration of these more advanced works, however, we must examine a few examples of the relief sculpture of the twelfth century.

Besides the jambs and archivolts, where figure sculpture in the full round was effective, the tympanum and lintel of the portal presented within easy view admirably protected fields for relief sculpture. On these limited surfaces the architectural restraints, though still imperative, were not of the same kind as those which governed the forms of the statues of the jambs. Grouping and freedom of movement were possible in this situation, and relief compositions embracing many figures in free action, setting forth some scriptural story or religious legend, were here elaborately wrought.

<sup>1</sup> Exceptions to this rule occur, of course. Among these may be mentioned the real niches in the gable of the central portal of the west front of Bourges. Cf. Viollet-le-Duc, s.v. *Niche*, p. 414 *et seq.*

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SCULPTURE OF LINTEL, CATHEDRAL OF SEBASTIA  
Later part of twelfth Century

Among the earliest remaining examples of such compositions are those of the tympanums of the portals of the west front of St. Denis and the tympanum of the south door of the west façade of the Cathedral of Paris. The sculpture of this latter tympanum was carved during the administration of Maurice de Sully, the founder of the cathedral, and it is supposed to have been either a part of an earlier façade or of one that was projected.<sup>1</sup> The preservation of this work and its incorporation with the new façade show, on the part of the artists of the early thirteenth century, a generous recognition of merit in the works of their predecessors. In these sculptures the qualities already noticed as characterizing the early art of the Ile-de-France are noticeable. In the upper portion of the tympanum the Virgin is represented in high relief enthroned under a shafted canopy with angels and other figures on either side. The forms are modelled with delicate skill, and the movements are easy and graceful. The work manifests a genuine artistic spirit, though the conventions and archaisms of the primitive schools are still strongly marked.

Among other works of this class which were executed during the twelfth century, the reliefs of the lintel of the Cathedral of Senlis are of surpassing beauty. They are two in number, the lintel being divided into two parts by a central shaft carved on its face. The subjects represented are the Death of the Virgin and the Resurrection of the Virgin. The first composition, on the spectators' left, is so much mutilated that it cannot, by itself, be fairly judged. But the one on the right (Plate X), representing the resurrection, though also sadly broken in parts, is yet tolerably complete as a whole. It is not easy to find terms in which to convey an adequate idea of the merits of this remarkable work. In sentiment and grace it is equalled by few reliefs of any school or period. The archaisms of treatment which it exhibits, like those of the subsequent masterpieces of painting by Giotto, — which the work in many points resembles, — do not unpleasantly affect its charm. It is an instructive fact, not often enough considered, that the works of art of past ages in which sentiment and expression are the most touching and admirable are usually those of early masters who have but imperfectly attained command of technical processes.

<sup>1</sup> Cf. M. F. de Guilhaemy, *Itinéraire Archéologique de Paris*, pp. 68, 69.

With the full attainment of technical skill artificial qualities of design and affectations of expression are apt to be manifest. Compare, for instance, Giotto's fresco of the Death of St. Francis with Raphael's Transfiguration; or Carpaccio's Sleeping St. Ursula with Titian's Assumption. In this relief of the lintel of Senlis there is a tenderness of expression and a natural unity of movement in the eager group of welcoming angels as they press forward to aid the awakening soul. No exaggerated gesture and no affected grace mar its subtle beauty. The angelic attendants are absorbed in their joyful ministry to the rising spirit, and each figure contributes its part with consummate though unconscious art. In composition of lines and placing of masses the design has extraordinary merit. The wings and draperies are harmonious and balanced, and the forms, though technically imperfect, have a naïve charm. It would be hard to find, in the whole range of plastic art, a figure of less conventional pose, or more subtle beauty, than the angel on the left who stoops forward to support the shoulder of the Virgin. The slight lack of symmetry which may, at first glance, be felt in the total scheme is corrected by the adjoining composition when the lintel is viewed as a whole. But even by itself the design is not ill balanced. A pyramidal arrangement of the central masses is noticeable; and it will be seen that the stooping figure and the upright shaft on the left form opposing and balancing lines to the stooping figure and the erect one on the right. The central figure in the upper row on the right, for which there is no counterpart on the left, serves to break up any too marked formality of arrangement, and to complete the natural grouping through which an orderly principle of design is fully maintained. As in all other noble art it is here evident that the artist was animated by no theoretic ideal. No conventional elegance, no artificial types, were as yet sought. The types are common and are rendered with archaic simplicity. The charm of the work depends upon its genuine sentiment, its rhythmical grace, and its well-ordered design. So, too, it was with the early art of Greece. The same underlying principles give to the reliefs of the Harpy Tomb, and the Leucothea of the Villa Albani, a kind of beauty that is wanting in the more technically perfect art of Scopas and Praxiteles. And so it was again with the works of the early Italian designers. The

polished but artificial types of form, and the meretricious refinements, which belong to the later developments of Italian art, do not appear before the sixteenth century. The types of Giotto, of Angelico, and of Massaccio exhibit no artificial character: they are the familiar types of the men and women whom the artists found about them; but with such types these great artists, like those of France in the twelfth century, knew how to produce works of exalted beauty. I do not, however, mean to imply that archaic treatment and common types are necessary characteristics of the greatest art. I would merely emphasize the fact that hitherto (except perhaps in Greek art) the work most distinguished by power and variety of expression has exhibited these imperfections. The integrity of feeling manifest by early masters seems, as has been often observed, to be lost before technical perfection is reached. The plastic art of France in the twelfth century does not exhibit any of those superficial attractions which appear at a later epoch; but in essential merits it is not inferior to that of any other time or school. Of this art there is hardly a more admirable example extant than the lintel of Senlis. And this work is no less meritorious in execution than in design and sentiment. Wrought in a fine, close-grained stone, which takes a finish almost equal to that attainable in marble, every mass is finely modelled and every detail is crisply cut. The number of works of this epoch remaining is limited. The most extended, if not in all respects the most noble, impulse in the Gothic art of figure sculpture was yet to come. The foregoing examples will serve to show the state of development that had been reached in the Ile-de-France before the great façades of Paris, Amiens, and Reims had come into existence. Of the cathedrals that were begun in the twelfth century few were completed so far as to include their west ends before the thirteenth century. The vast wealth of statuary which adorns these sublime monuments is, for the most part, subsequent in date to the year 1200.

Gothic sculpture of the early thirteenth century develops into forms that are less cramped by imperfect technique, and that bear fewer traces of primitive conventions, than the works of the preceding century. Taught by the example of the earlier mediæval schools, imbued with the spirit of ancient



design traditionally transmitted through Byzantine art, but not enslaved by its technical mannerisms, the artists of the Royal Domain began with rapidly increasing proficiency to give freer play to their own imagination and observation, and to produce works of art which in all but sentiment—in which the best works of the twelfth century cannot be surpassed—remain unrivalled among the productions of the Middle Ages.

The portion of the Gothic building where figure sculpture chiefly occurs is the western façade, though other parts of the exterior are also more or less richly adorned with statues. In a cathedral of the first order, such as Paris, Chartres, Amiens, or Reims, many hundreds of sculptured figures are displayed. Gathered principally within the deeply splayed portals, there is

FIG. 220. — Paris.

often in addition, as at Paris, Amiens, and Reims, a row of colossal statues just above them extending across the entire front. And besides these are many figures, on large and on small scale, under the canopies of the buttresses, while gargoyles project from the cornices, and grotesque creatures are ranged upon the parapet.

Of all the great cathedral façades of this epoch the most important in point of sculpture is that of Paris. Begun in the very first years of the thirteenth century, it exhibits the finest work of the French carvers during the entire first quarter of that century. No other church, not even Amiens, affords so fine a display of the Gothic genius in this branch of design. As almost everywhere else in France, a great part of the sculptured enrichment

of Paris has perished by wilful human violence. In view, however, of the vicissitudes of popular sentiment and passion through which it has passed, it is surprising that so much of the original ornamentation of this noble monument has been preserved. Of its three great western portals nearly all the sculptures of the tympanums and archivolts remain substantially unimpaired. Those of the north door are the earliest, it having been at this point that the erection of the façade was begun in the first decade of the thirteenth century.<sup>1</sup> The sculpture of the tympanum of this doorway is thus in date enough later than that of the lintel of Senlis to show a considerable advance in point of freedom and skill in the rendering of forms. This tympanum is divided horizontally into two compartments. In the lower compartment (Fig. 220) is represented the entombment of the Virgin, and in the upper compartment her coronation. Such skilful treatment of form, and such beauty of modelling, had not before been seen since the ancient classic times. And here again the likeness to certain qualities of Greek art is both remarkable and instructive. It is a fundamental likeness, showing itself in those finer peculiarities of composition and execution which escape the merely imitative workman but are natural to the workman who has been bred on traditional principles. It is due, probably, to the natural propensities of men constituted like the mediæval artists of France, and disciplined as they had been by the Greek artistic traditions as transmitted through the Byzantine channel. The native qualities of the race made them quick to assimilate what was vital in these traditions, the imagination was stimulated by the poetic and religious ideals of the age, and sustained by popular interest. The free study of nature by such men under such conditions might naturally lead to results having much in common with those that had before been reached by the Greeks. Not, however, that the mediæval outlook upon the world of nature, or the mediæval apprehensions of beauty, were the same as those of the ancient Greeks. They were, of course, in many respects so widely different that there was little in common between them. The Greek, in his mature development, demanded physical beauty. In draw-

<sup>1</sup> Cf. Viollet-le-Duc, s.v. *Porte*, p. 421; and Guilhermy, *Itinéraire Archéologique de Paris*, p. 24.

ing from nature his materials, wherewith to give worthy embodiment to his conceptions of gods and heroes, he rejected, for the most part, all that was not outwardly beautiful. Selection with him was an inborn principle and a constant habit. The Gothic artist, on the contrary, saw that charm may coexist with bodily imperfection; and although he also exercised a spirit of choice, this choice was not determined by exclusive regard for physical qualities. It sought after an expression of the spirit which may lend an interest to the sculptor's work superior to that of mere perfection of form. But while thus differing in their respective aims and apprehensions there is nevertheless a close and interesting kinship between the Greek sculptors of antiquity and the Gothic sculptors of the Ile-de-France in the thirteenth century. They exhibit a similar understanding, though a different choice, of the elements of form; and a similar sense of the treatment which the ends of plastic art demand. It is this similarity of artistic feeling and executive instinct, finding expression under changed conditions in new forms, which gives the likeness to Greek art that we recognize in this sculpture of the portal of the Virgin, and in so many other examples of Gothic art. It is, however, only in technical qualities that this tympanum shows a marked advance. The sentiment and expression of the lintel of Senlis are by no means equalled by this work.

Judging from what remains of the reliefs of the tympanum of the central portal, the total design must have been even finer in spirit than that of the portal of the Virgin. But this tympanum has suffered greatly. In the last century it was subjected to the most outrageous mutilation at the hands of the architect Soufflot, who, in order to enlarge the space for the passage of processions on high ceremonial occasions, removed the dividing pier and cut a large piece out of the lower part of the tympanum.<sup>1</sup> The subject is the Last Judgment, and it

<sup>1</sup> Cf. De Guilhermy p. 26. This mutilation, and the fact that a part of the sculpture of the tympanum as it now exists is a restoration, were inadvertently overlooked in my first edition. This restoration, like many others that have been lately executed in France, is a marvel of skilful workmanship. The tympanum as it now stands has the appearance of an unaltered original work. This is a matter for regret rather than satisfaction; for while it may appear to restore the original effect, it misleads the unsuspecting observer. The monument is rendered to this extent a corrupt document. Skilful and admirable as the work of the modern imitator may be, it cannot

is treated with an impressiveness hardly equalled elsewhere. It would be difficult to find another tympanum of the time so nobly embossed with expressive sculpture.

Passing to the works of the second half of the thirteenth century we have an elaborate example, dating from about 1257, in the door of the south transept of this same Cathedral of Paris. It may be noticed in passing that constructive propriety is not strictly observed in this doorway. The sculptured archivolts are not sustained by true shafts with capitals and bases as in the earlier Gothic portals; but in place of them slender rounds, which are merely mouldings, rise continuously to the crown of the arch. In this, and in some other respects, this portal belongs to a class of constructions which at this epoch first introduced elements of decline into Gothic architecture. The statues which adorn the jambs of this doorway are placed in niches between these continuous mouldings, and thus have a degree of independent character which is in contrast to the strictly architectural dependence of the statues of the best period of Gothic art.

The subject of the sculptures of the tympanum here is the history of St. Stephen. They display much beautiful carving—figures of lifelike freedom wrought with technical skill of a high order and with elaborate finish. But the monumental grandeur and naïve sentiment of the best Gothic period have here given place to a somewhat over-naturalistic treatment and a melodramatic expression. The sculptor has apparently become conscious of his art and seems to take pleasure in its display.

Returning now to the consideration of statues ranged against the jambs, or wrought upon the dividing pillars of the doorways,<sup>1</sup> one of the finest, dating from the first half of the thirteenth century, is the statue of the Virgin of the south

be in all respects like the original work in whose place it stands. Its incorporation with the old work is a deplorable and inexcusable mistake, and an injustice to students of mediæval art. In cases where the original sculpture of great monuments has been injured, the best that their custodians can do is to protect from further harm what remains, leaving the gaps to stand as such. The façade of Paris would be more impressive with the scars of past ages all visible than it now is in its deceitful completeness.

<sup>1</sup> After the eleventh century the principal portals of the great monastic and cathedral churches were commonly divided into two openings by *trumeaux*, or pillars of stone, affording place for a statue on its front face.

door of the west façade of Amiens. As I have already said, the artists of the early thirteenth century were able to give more freedom and natural modelling to such figures than had been the case with those of the preceding century, while maintaining that monumental character which is so essential a quality of architectural sculpture. In this Virgin of Amiens the archaisms that appear in the early statues of Chartres and St. Denis give place to a more skilful and natural execution. The head of this figure is well set, the features are regular and finely cut, and the wimple falls in graceful lines upon the shoulders. The pose of the body is unconstrained, though quiet, and the simple draperies are cast into easy folds of truthful form as well as classic elegance. Few examples of mature mediæval art exhibit more calmness or more sweetness of expression.

More strikingly graceful and queenly in bearing is the statue (Fig. 221) of the Virgin in the portal of the north transept of the Cathedral of Paris. In the Virgin of Amiens just spoken of, as in the earlier Gothic statues generally, the weight of the body is supported equally on both legs. This keeps the shoulders level and produces a somewhat formal cast of draperies, as in Figs. 218 and 219, pp. 367, 368; but in this figure an easier posture

FIG. 221. — Paris.

is assumed. Resting mainly on the left foot, the lower part of the body of this Virgin of Paris is thrown slightly to the

left, while the right knee is naturally a little bent, the right arm and shoulder a little lowered, and the head inclined a little to the right. A rhythmical flow of lines is thus obtained, which is the more delightful because it is nowhere too pronounced. The drapery exhibits an effective mingling of simple nature and subtle art, especially where a portion of the mantle is cast over the left arm and falls vertically in a heavy fold to the foot of the figure. A line of twofold value is thus obtained which echoes the upright members of the architecture and enhances by contrast the beauty of the curves. This pleasant artifice is indeed as old as the art of sculpture, having been employed, with a great variety of adjustment, in innumerable draped statues by the sculptors of antiquity. It is here employed in no spirit of imitation, but with a genuine sense of effective composition and of truth to nature, guided by tradition.

It is worthy of notice that in the best Gothic sculpture, as in the best sculpture of antiquity, no trivial elaboration of textures occurs. The surfaces of these statues are generally rendered in the same manner throughout. Flesh and draperies are alike smoothly worked. In hair, wings, or embossed ornaments, a somewhat rougher texture may be given; but not with any naturalistic intention or result. The Gothic carver, like the carver of ancient Greece, wisely limited his art to the monumental expression of form alone.

If we now pause to consider what had by this time been accomplished, and reflect that in Italy Giotto was not yet born, that the sculptures of St. Denis and of Chartres antedate by nearly a century the art of Niccola Pisano, and that a considerable time was yet to elapse before Italy should produce a figure equal in beauty and expression to this Virgin of the transept of Paris, we can hardly fail to be impressed by the worth of the Gothic schools of France, which at this early date had reached so high a state of development.

Gothic sculpture is further remarkable as the first art the world had seen in which expression, rather than perfection of bodily form, was primarily sought. It cannot, indeed, be said that the sculpture of Greek antiquity was wholly wanting in expression; but it is generally true that such as it had was subordinated to the quality of corporeal beauty. By expression I here mean some indication in face, movement, or

gesture of thought or emotion. We may not be able always to read with certainty the intended thoughts or feelings; but we are, in the best Gothic sculptures, usually impressed with a sense that the minds of the personages represented are in some way exercised. And often we may divine, almost with certainty, the nature of the thought or sentiment which the artist endeavoured to make his figure express. What we have seen in the relief of the lintel of Senlis is but a conspicuous instance of that which is in some measure apparent in most of the best sculpture wrought by the hands of Gothic artists. And this development of expression as a chief animating motive of the art is a natural outcome of the mediæval, as opposed to the ancient, genius; of the Christian, as opposed to the pagan, ideals. In the arts of the primitive Christian times this quality of expression hardly appeared; the requisite skill to produce it was wanting. Gothic sculpture was the first Christian art that was technically advanced enough to become a medium of varied expression.

But though expression was a leading motive, it does not follow that bodily beauty was ignored by the Gothic artists. The production of such beauty was distinctly one of their aims. In the Gothic ideal, however, physical perfection did not count for everything; many imperfections of form were, as we have seen, accepted, yet notwithstanding such imperfections the general scheme of a Gothic design in sculpture, and the general rendering of it, rarely failed to be beautiful. The idea that this art was animated by an ascetic spirit which was incompatible with beauty is a mistaken one. The Christian doctrine of self-abnegation did not, with the mediæval artists of the Ile-de-France, at all preclude the joyful contemplation of all that was regarded as becomingly fair; and although, in the representation of terrestrial beings, deformity was sometimes admitted, the illustration of the mediæval conceptions of the supernatural led often to the production of exquisite types of beauty. But these ideal types were very different from those of classic art. The Christian sentiment naturally rejected everything that savoured of bodily charm alone. It demanded a fitting modesty and sobriety; and, as a rule, it represented the clothed body only.

The middle of the thirteenth century marks the technical culmination of Gothic sculpture. The carvers of this period had

mastered all of their material processes, and had brought the plastic rendering of form in the draped human figure to a degree of monumental perfection that had hardly ever been surpassed. During the second half of the same century some magnificent works in statuary were, indeed, wrought; but none of them exhibit qualities superior to those of the Virgin of the north transept of Paris. In these later works, however, it is interesting to see that some of the ancient conventions, especially in the treatment of hair, still survive, while there is a great advance in the natural and free arrangement of locks. Some of the statues of the portals of Reims, for instance, while finely suggestive of nature, have a rhythmical sequence of lines and masses, and an appropriately lithic character, which are reminiscent of the antique and yet are distinctly mediæval.

Passing from the carving of the human figure to that of other objects, we may begin with some consideration of the grotesque in Gothic art. The representation of physical beauty being with the Gothic carver subordinated to the purpose of enforcing the idea that the soul is superior to the body, and of illustrating the doctrine of the salvation of the soul by goodness of life, and the loss of the soul by evil life, it was necessary that beings and objects not beautiful should enter into his sculptured ornamental schemes. The evils that beset the lives and tempt the souls of men had to be in some way set forth no less than the human virtues and the heavenly ideals. The unhappy lot of the wicked had to be figured as well as the felicities of the good. Hence figures which embody the mediæval notions of the monstrous and the grotesque are conspicuous elements in Gothic sculpture, especially after the beginning of the thirteenth century. The grotesque, in the finest Gothic art, while often apparently introduced in a playful spirit, had thus primarily a serious purpose.

The Romanesque imagery, consisting of fantastic creations of animal life which embodied distorted traditions of the Roman mythology, combined with forms originating in the rude imagination of the Northern races, was largely rejected by the early Gothic artists. The imaginary creatures which they sometimes introduced were, for the most part, confined to the symbolic animals of the Bible — such as those seen by St. John in the Apocalypse. Characteristic instances of these occur on the



tympanums of the central doorways of Chartres and Le Mans.<sup>1</sup> But by degrees other imaginary creations were introduced, until finally the grotesque animal life of the Gothic edifice became even more extended in range than that of the richest Romanesque monuments had been. The sparing use of grotesque sculpture extended, indeed, through the twelfth century; and the most of it had an ornamental character like that which was so abundantly introduced, during the same period, in the elaborately wrought borders of illuminated books. Figure 222,



FIG. 222. — Senlis.

from a plinth of the central portal of the Cathedral of Senlis, is a typical example of such sculpture. The manner in which this human-headed and winged monster, with a tail branching into leafage, is gathered into the space between the mouldings is ingenious and effective. On such fanciful themes an endless variety of amusing changes were rung, and in them the fertility of the Gothic imagination is astonishingly manifest.

During the thirteenth century, as I have said, the production of grotesque creatures became vastly more extended, and an imaginary fauna was created which, while it derived much

<sup>1</sup> Cf. Viollet-le-Duc, s.v. *Animaux*, p. 20.

from the older conceptions, embodied so much that was new as to constitute a distinctly Gothic class. This development grew primarily out of the old popular belief in the symbolic character of animals and imaginary creatures.<sup>1</sup> As symbols of human qualities, both good and evil, these animals, real and imaginary, were now wrought, for encouragement and for warning, upon the stones of the sacred edifice. A further purpose of this fauna, as of the sculpture of the human figure and the flora with which it was associated, apparently was that the Gothic monument might present a compendious illustration of the known world of creation, imagination, and faith.

A remarkable quality of the grotesque creations of Gothic art is the close and accurate observation of nature which they, no less than the images of real things, display. However fabulous the imagined creature may be, the materials out of which he is made are derived from nature, and manifest a keen appreciation of animal structure. Vertebra or claw, wing or beak, eye or nostril, throat or paw, — every anatomical member displays an intimate familiarity with real organic form and function, and an imaginative sense of its possible combinations in creative design.<sup>2</sup> Take, for instance, one of the grotesque creatures (Fig. 223) which play among the leafage of the portal of the Virgin in the Cathedral of Paris, or a gargoyle of the cornice, or one of the strange beasts, or terrible demons of the parapet. Each of them seems animated with a living spirit, and has an almost startling appearance of reality. And besides this lifelikeness and functional truth, a highly ornamental play of lines, and a subtle elaboration of finely modelled surfaces, are shown in these grotesque forms. In the early and early mature periods they exhibit a noticeable restraint of posture and movement; extravagantly contorted forms and violent movements occur, for the most part, only in the decline of Gothic, when jaded sensibilities had ceased to appreciate the value of moderation in design.

With the figure sculpture is associated, as we have seen (pp. 23-24), a vast profusion of other carved ornament, mostly composed of conventionalized leafage, which, wrought upon the leading structural members of the building, softens and enriches

<sup>1</sup> Cf. Cahier and Martin, *Mélanges d'Archéologie*. Paris. Tome I, p. 106, *et seq.*

<sup>2</sup> Cf. Ruskin, *Modern Painters*, vol. iii. p. 97 *et seq.*

its rigid lines, hard angles, and broad surfaces with a beauty akin to that which in nature clothes the hardness of the framework of the earth.

The carved foliate ornament of the Romanesque builders

FIG. 223. — Paris.

had been mainly derived from the ancient conventional designs of Roman and Byzantine art. These ancient motives had been worked over and variously modified, — in many cases rudely, in others with much ingenuity and skill, and often with lively fancy, — but for a long time with little original invention. Fresh motives, however, now began to appear, and the inspi-

ration of nature at length transformed the traditional elements into those living and beautiful forms of endless variety which are peculiar to Gothic art.

The ornamental carvers of Burgundy appear to have been the first to break away from the older types of conventional leafage. The capitals of the porch of Vézelay, begun in 1132, and those of the nave of the nearly contemporaneous Cathedral of Autun, exhibit, in the acanthus-like foliage with which they are adorned, the fresh inspiration of nature, while at the same time they retain a large measure of the older conventional character. Figure 224 exhibits a fragment of this leafage from a capital of the nave of Autun. The springy lines and energetic forms of this fragment are in noticeable contrast to the more conventional Romanesque foliate types.<sup>1</sup> But it was reserved for the artists of the Ile-de-France in the twelfth century to completely emancipate foliate sculpture from the Romanesque conventions, and to create wholly new types of the highest beauty.

FIG. 224. — Vézelay.

In the capitals and other carved members of the early transitional buildings of France two leading types of Romanesque ornament survive, — one consisting of interlacing patterns, sometimes mingled with leafage and animal forms (Fig. 225), and the other a modified survival of the Corinthian leafage of antiquity (Fig. 226). To these may be added a third type, of less frequent occurrence in early Gothic art, consisting of human figures and grotesque animals almost exclusively. The interlacing patterns, being incapable of further development

<sup>1</sup> Cf. Viollet-le-Duc, s.v. *Sculpture*, pp. 184, 185.

and unsuited to Gothic taste, soon fell into disuse. The ornament consisting of figures and animals was also soon abandoned; but the Corinthianesque leafage naturally gave rise to those endless modifications which the suggestions caught from other forms of natural leafage soon prompted the fertile French carvers to effect.

Among the earliest extant instances of Gothic foliate ornament which show the fresh influence of nature are those which adorn the capitals of the choirs of St. Germer-de-Fly, and the cathedrals of Noyon, Senlis, and Paris. The derivation of these capitals from the classic Corinthian type is clearly apparent, though their forms and proportions vary greatly, and all



FIG. 225. — Senlis.

FIG. 226. — Senlis.

differ widely in appearance from the classic models. The influence of nature in the leafage of these capitals may not, at first sight, appear to be clearly marked. The broad leaf forms of the capitals of the great columns of the sanctuary of Noyon (Fig. 148, p. 310), for instance, show no very close resemblance to nature. They are, in fact, little more than refinements of traditional Romanesque types like that shown in Fig. 227, — a capital from the Abbaye-aux-Dames of Caen, which is merely a rude and simplified version of the classic Corinthian. But the refinements of form which mark this conventional leafage of Noyon, and render it superior to the Norman work, are plainly caught from nature. The vigorous curves and fine surface modellings which it exhibits are without parallel in the older

carvings wrought by workmen who derived little of their inspiration directly from living things. Almost countless varieties of capitals of the Corinthianesque type were produced in the Ile-de-France during the twelfth and thirteenth centuries, but in the leafage with which, in the early Gothic period, these capitals and other members were adorned, the broad forms of water-plants largely prevail, as in the example from Noyon (Fig. 148), in the capitals of the triforium of Senlis (Fig. 228), and those of the choir of Soissons (Fig. 61, p. 129). Richer leaf forms of monumental elegance are also abundant at the

FIG. 227. — Abbaye-aux-Dames.

same time, as in the triforium of Paris (Fig. 150, p. 312), and the triforium of Laon (Fig. 151, p. 314).

In none of the earliest Gothic foliate ornament does the influence of nature do more than give a new and more vital beauty to the lines and modellings of the elements employed; but soon a more direct study of nature is apparent, and, while the art still remains nobly conventional, a fuller suggestion of organic life, and even something of specific leaf form, occurs. Thus in Fig. 149, p. 311, the crockets are formed of unfolding leaflets which are unmistakably drawn from the fields. This sculpture dates from the third quarter of the twelfth century, and the same motive is repeated under many forms through

several subsequent decades. The triforium of Paris alone exhibits a wide variety of kindred designs of the utmost beauty, all of which show that unexampled spirit of observation and invention which gave a living character to the Gothic edifice even in its smallest details.

The capitals of the triforium of the nave of Paris may be considered as marking the culmination of Gothic art in foliate design. A general unity of character throughout the whole

FIG. 228. — Senlis.

arcade coexists with that constant variation of details for which Gothic carving is unique. I have already (p. 315) referred to the variety in the profiling of the abaci of these capitals. The variety in their foliate ornamentation is still greater. The crockets under the angles of the abaci, of which five examples are given in Fig. 229, are of exquisite beauty and of highly architectural character. The inspiration of nature has completely transformed the traditional motives; but, while the ancient form of the volute is discarded, a reminiscence of it is

retained. No merely fanciful recasting of old elements could lead to the production of forms like these. The growing leaves of the forest and the field could alone supply the requisite models. But it required genius of a high order to lay hold of the natural elements without, at the same time, becoming entangled in a myriad of qualities and details that were unsuitable to the purposes of architectural ornament. To simplify nature and yet to preserve what is most expressive, to bring out in sculpture the full value of what nature suggests, and also to secure a lithic and monumental character, requires the most perfectly trained artistic powers. And such powers, in respect to foliate ornament, were

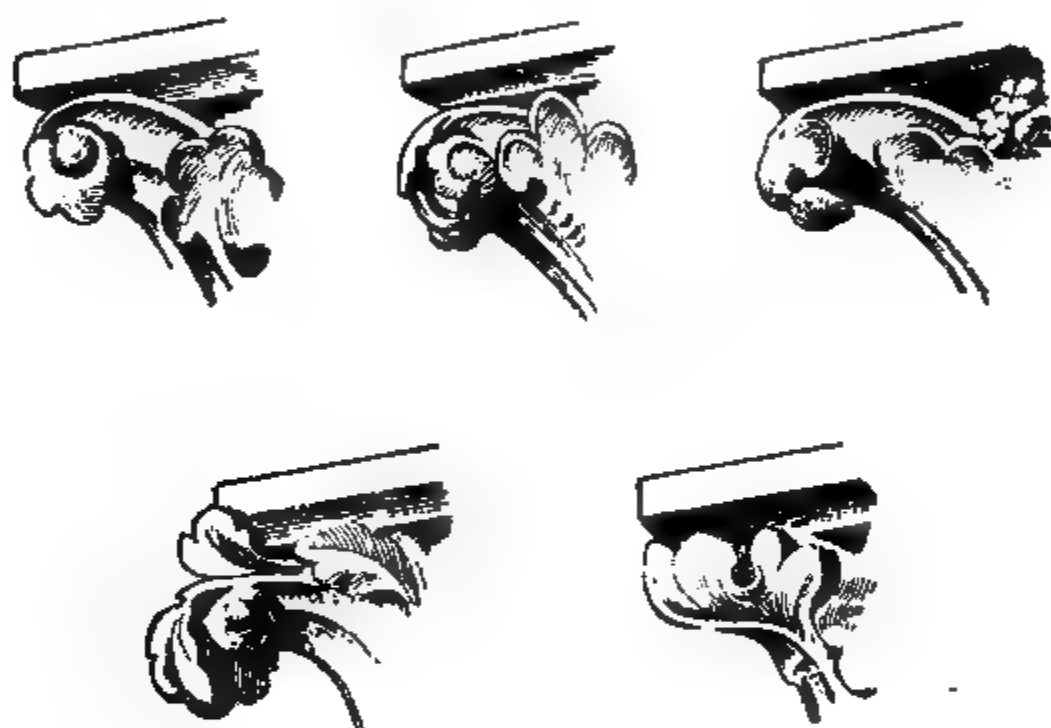


FIG. 229.

never so admirably developed, before or since, as they were by the French sculptors of the twelfth century. The mind of the carver of this time was so imbued with monumental instincts that he felt no temptation to imitate with realistic intention the finer *minutiæ* of leaf or stem. These he well understood were incompatible with the purposes of his art. But to catch a new grace from expanding bud, or broad leaf outline, his eye was ever alert. It is interesting to notice that the plant forms first employed by the Gothic artists for ornamental motives were those of springtime, — the opening buds and newly formed leaves of familiar plants: fern, arum, hepatica, plantain, and many others. It was both natural and appropriate that this spring herbage, more than any other, should stimulate the



fancy of the men in whose hands the Gothic style itself was taking form; for in the leafage of spring there is an expression of living energy which accords, as nothing else does, with the vital organic spirit of this new architecture.

Gothic sculpture, even of this purely ornamental kind, always manifests a feeling of pleasure in natural beauty; and it is the first sculpture in the history of the arts which, in foliate ornament, exhibits this feeling in its fulness. The ancient regard for the beauty of vegetation, as far as the witness of art attests, was far more limited and subordinated to interest in the human form. Special attention to the beauties of leafage, or much expression of keen enjoyment of its organic life, will, as a rule, be sought for in vain in the arts of antiquity. Antique foliate ornamentation is usually in comparison cold and formal in its studied curves and surfaces; but in Gothic foliage a keen delight in every beauty of living growth is constantly manifest.

To this subtle feeling for nature and wise acceptance of the limitations of art, the French foliate carver joined a finished delicacy of execution equal to that displayed in the statuary. No rough tooling is visible in the French art of the twelfth century. The surfaces are often finished so that hardly any trace of the chisel can be detected. The ornamental carving of the Cathedral of Paris is worked with a delicacy that is unsurpassed by that of the frieze of the Parthenon or the shrine of Orcagna.

The finest characteristics of this art are exhibited in the capital (Fig. 150, p. 312), from the triforium of Paris. The Gothic carver's enjoyment of nature, his powers of abstraction and adaptation, his genius in design, and his skill in execution are all fully manifest here. The Corinthianesque motive is apparent throughout the ornamentation of this capital, though the elements, like the form of the entire member, are fundamentally changed. This ornamentation consists of four great compound leaves rising against the bell, one under each angle of the abacus, with four lesser leaves in the intervals, one under each side of the abacus. The grooved midribs of the greater leaves (which terminate in crockets) take vigorous springing curves which rise from the neck moulding and have an expression of inherent energy as if supporting the corners of the abacus. The forms of the leaves are simple, each consisting of a central member with a five-lobed leaflet on either side of it. In outline

they are full of grace and spirit, without any complete imitation of real leaf forms. In respect to coördination of elements, the forms are massed with exquisite art—the deep depressions and sharp incisions producing effective contrasts to the broadly lighted parts. And while symmetrically arranged they have no rigid or mechanical formality of arrangement. In Gothic art, as in nature itself, symmetry is never absolute as in a geometric figure. The balanced parts of every symmetrical ornamental scheme always exhibit vital irregularities. This is true also, of course, of ancient and early mediæval art; but it is more emphatically true of Gothic. No deep undercutting or any excessive projections occur. The form of the bell is strictly preserved, and no unmodelled masses or unfinished forms anywhere appear. The finish is of extreme refinement—every ridge is smoothly rounded, and every depression is carefully hollowed.

But this superbly monumental type of carving did not continue to be produced long after the beginning of the thirteenth century. A decline in true artistic feeling was setting in, and with this decline the interest in nature began by degrees to allure the sculptor away from the severely conventional treatment, and to lead him into a path of naturalism which was incompatible with the best architectural effect. As we approach the west end of the nave of Paris, a marked increase of direct likeness to nature in the foliate ornamentation is noticeable, until architectural fitness is almost lost in the capitals of the chapel of the catechists in the south tower. Here, in the southeast angle, the vaulting shaft has a capital (Fig. 230) in which the ornamental motive is wrought out with an approximation to literal exactness. It is hard to qualify our admiration for so beautiful a work; but it must be felt that this leafage is not, so much as that of the former example, an integral part of the capital. It has too much the appearance of real leaves laid up against the bell. The undercutting is so deep that a look of detachment is in some places suggested which impairs its architectural expression. The plant form from which this ornament is derived is apparently the water-cress, and the carver has reproduced with much fidelity, though on a greatly enlarged scale, the main characteristics of the natural growth. But apart from the defects which here result from a partial forgetfulness of

monumental exigencies in enthusiasm for natural beauty, this sculpture has those merits which are peculiar to the works of the best Gothic carvers.

Among capitals which, though less finely wrought, show great beauty and variety of naturalistic design, are those of the Cathedral of Laon, of which Fig. 151, p. 314, from the triforium of the south transept, is one of the most characteristic. The

FIG. 230. — Paris.

variety of beautiful ornamental foliate motives to be seen in this triforium almost exceeds that to be found elsewhere, except in the Cathedral of Paris and the Church of St. Leu d'Esserent. They invariably show a keen enjoyment of nature and wonderful skill in the architectural adaptation of natural leaf types. The types of Laon are quite distinct from those of Paris; but they are hardly inferior to the best of those which that cathedral presents.

Leaving now the capitals, we find in the running leaf orna-

ments of the jambs and archivolts of the portals of the west façade of Paris examples of equally beautiful work. An illustration of this leafage is given in Fig. 223, p. 384, and Fig. 231 exhibits another bit of characteristic beauty. The sense of nature conveyed, notwithstanding the frankly conventional treatment, is remarkable; it is a masterly rendering of the expressive lines and forms without any undue naturalism.

FIG. 231.—Paris.

In the carving of the triforium string-course (Fig. 232) and that of the cornice of the exterior of the nave (Fig. 233) of the Cathedral of Amiens, the same monumental expression of foliate life is noticeable in leafage of a different kind. The springy contours and finished modellings of these examples are without parallel in the ornamental art of any other style or period. This foliate sculpture of Paris and Amiens is of the most distinctly Gothic type. It is the farthest removed from classic types, the most suggestive of the beauty of nature, and at the

same time it is all based, as we have before remarked, on ancient ornamental schemes of composition. No monotonous

FIG. 232. — Amiens.

reproduction of formal patterns, or wearisome repetition of the same elements, is ever found in Gothic art. A perpetual

FIG. 233. — Amiens.

variety of living forms is invariably maintained, though there is a regular recurrence of sufficiently similar elements. Vitality and freedom are governed by order and sequence of design

down to the smallest details, as in the bunches of berries which alternate with the leaves of the string-course (Fig. 232); and in Fig. 231 it will be seen that the berries of the bunch in the hand of the figure fall into a regular series following the natural spiral arrangement around the supporting stem. We have in this another illustration of the kinship to Greek art which this sculpture shows in so many other points.

Such, with almost infinite variety, is French Gothic foliate sculpture. Its finest types, illustrated by the capitals of Paris and the string-courses of Amiens, hardly appear after the second quarter of the thirteenth century. From this time



FIG. 234. — Noyon.

onward the direct imitation of nature became too much the artist's aim, and the necessary architectural adaptation was more and more lost sight of. A few further illustrations of the change from the one condition to the other may afford by contrast a better understanding of the qualities which characterize the art at its best. Figure 234, a portion of a string-course from the later works at Noyon, shows, in a marked degree, the tendency to over-naturalism which had strongly set in by the middle of the thirteenth century. There is much beauty in this design, and its execution is excellent; but it has lost the nobly conventional character that marks the strings of Amiens. The carver no longer possesses the power of monumental abstraction. He reproduces too literally and completely the finer details of nature. The close relation which had

formerly been maintained between structural members and their carved ornaments was soon lost under this over-naturalistic treatment. In the late, though still beautiful, capital (Fig. 154, p. 318) from the arcade of one of the choir chapels of Amiens, for instance, the leaf ornament which adorns the lower part of the bell has no integral connection with it. It is like a cluster of freshly gathered leaves applied to its surface. The foot-stalk has even the natural enlargement at the base, and the peculiar pointed form beneath, which are found in nature where a leaf is torn from its parent stem. The bell surface of this capital is independently developed from about the middle downward — a considerable portion of it being unoccupied by the ornament. The leafage of the other capitals of the arcade to which this example belongs is of great variety and beauty, and notwithstanding similar defects, it is yet far more meritorious than the leafage of the still later Gothic, in which a trivial naturalism occurs unaccompanied by any expression of the vitality and beauty of nature. Conspicuous examples of this debased style occur in the later capitals of Nevers; and it is noteworthy that whereas, as already remarked, the early Gothic leafage is that of springtime, the leafage of this latest Gothic is the dried leafage of Autumn. It is a curious fact, also, that in the intervening style, that of the mature Gothic of the second half of the thirteenth century, the ornament employed is derived from the fully grown leafage of summer-time, as in the porches of Chartres and the later portions of the nave of Reims. Of this summer leafage the delicate running ornaments (Fig. 235) in the archivolt of the *Porte Rouge* of the Cathedral of Paris are among the best examples. The wild rose is here reproduced with about as much literal likeness to nature as would be possible in sculpture. It is not without ornamental effect; but it can bear no comparison for effectiveness and monumental fitness with the conventional leafage of the twelfth century. There is thus a vast difference between the abstract naturalism which gives life and beauty to the early Gothic foliate ornament, and the imitative naturalism which belongs to the decline of Gothic art.

The nature of the difference is not, however, enough appreciated; a clear apprehension of the meaning of convention in art appears to be rare. The conventional character which distinguishes the work of every great artistic epoch does not

result from any arbitrary purpose : it has its foundation in the nature of things ; and the productions of the true artist become conventional (as remarked in Chapter I. p. 24) through an instinctive and unconscious obedience to the conditions under which he works.



FIG. 235. — Paris.

In Chapter I. the quality of breadth was mentioned as among the leading characteristics of Gothic sculpture. This ought to be emphasized ; for there is no quality for which this sculpture is more remarkable. Multitudinous as are the details which enter into the carved ornamentation of any great cathedral front, there is rarely any scattered effect in the parts or in the total scheme. An harmonious relationship of mass to mass, from



largest to smallest, is maintained. Such breadth is, indeed, a fundamental quality of all good art; but its manifestation is perhaps more remarkable in Gothic architecture than in any other because of the numerous subdivisions through which it has to be preserved.

The attainment of this breadth by the Gothic designers seems the more remarkable when we consider the individual freedom of the vast numbers of men who were employed upon the mediæval buildings. Of this freedom the work everywhere bears evidence. The range of invention in the designing of figures and ornaments is, in any given case, far too wide to have been compassed by a single mind. There was, of course, a master builder, or architect, whose general scheme was followed; but there was no individual who, like a modern architect, strictly determined every detail. The conditions were all different from those of modern times. The bands of workmen, by whom these great buildings were wrought, and who went about from place to place wherever important architectural works were to be undertaken, had been trained in the great monastic schools. In these schools they had learned not only their craft, but also how to work together for common ends. There existed among them a strong *esprit de corps*; and each individual in the fraternity felt the ardour, the pleasure, and the freedom in his work that are inspired by mutual confidence and a common enthusiasm. So perfect was the concord of feeling, so imbued were all the members with the general principles of their art, that individual freedom had no tendency to produce insubordination in design.

The art schools of the Middle Ages were art schools in the truest sense. They were schools of practice where the novice learned his art by taking part, according to his capacity, in the actual construction and adornment of great architectural monuments. He was, of course, taught such general principles as had been acquired by tradition or derived from experience; but fresh experiment was ever affording fresh instruction to pupils and masters. A great public work in progress created naturally a great school of art; and so far as concerns artistic production no other kind of school has yet been of much avail.

One conspicuous element of effect in the sculpture of France in the Middle Ages is now almost entirely lost, and hence the aspect of even the best-preserved examples is very different

from that which they must originally have had. The colour with which these sculptures were enlivened has, for the most part, wholly disappeared. In most cases only a few faint traces of the original colouring is now, in sheltered places, to be found. But there are enough of these to show that colour was extensively employed. Such traces may be found in the portals of Senlis, Paris, and many other churches. In a few instances something like the whole colour scheme has been preserved, though in a much defaced condition. In the Sainte Chapelle of St-Germer-de-Fly, for instance, several statues, dating from about the middle of the thirteenth century, may be seen. These are exceptional in respect to the amount of colouring remaining on them; and they are very beautiful. They show plainly what was the character of the mediæval colour applied to figure sculpture. It corresponds, as we should naturally expect, with the colouring of contemporaneous illuminated MSS. The heads, hands, and feet are of creamy white, the cheeks being slightly reddened. The eyes are of a pale blue or brown colour with the pupil black. Hair and eyebrows are black, brown, or golden; and the draperies are mostly red, blue, and purple, with white and black; while ornaments, as jewels and embroideries, are gilded. Foliage and animals were coloured in an equally conventional way, as in the ornamental borders of the MSS., with no attempt at realistic effect. It was not until a later period, that sculpture was coloured in imitation of nature, as in the sixteenth-century choir screen of the Cathedral of Amiens. The earlier colouring is so like what we know of the colouring of Greek sculpture that we may perhaps reasonably believe the ancient tradition to have remained unbroken down to the thirteenth century.

## CHAPTER XIV

### SCULPTURE OF THE TWELFTH AND THIRTEENTH CENTURIES IN ENGLAND AND OTHER COUNTRIES

IN the architecture of the twelfth century in England figure sculpture is rarely met with, and where such sculpture does occur, it is naturally of the undeveloped and inexpressive, though often monumental, sort that was common to the whole of Europe before 1150. The French custom of enriching the portals of churches with statuary and reliefs was not generally followed in England. The difference, in this respect, which we find between the western portals of Vézelay and Autun and the nearly contemporaneous portals of Lincoln Cathedral is a difference which holds, in the majority of cases, between continental and English buildings through the whole period of Gothic art.

Among very early examples of figure sculpture in England is the band of reliefs which extends across that portion of the west front of Lincoln which was erected about 1090. This sculpture (Fig. 236), though coarse in execution and wanting in expression, has, nevertheless, a good deal of merit in point of architectural effectiveness; and the same may be said of other similar works; as, for instance, that of the so-called Prior's Gateway at Ely, which, though later and richer, is not very different in character. Hardly anything of more importance occurs in England until near the middle of the thirteenth century, when suddenly, in the west front of the Cathedral of Wells, we get one of the richest assemblages of sculptures ever gathered into an architectural monument. These sculptures differ widely from any that we have thus far noticed. They appear to have been wrought by an insular, and even a local, school, and yet a school that must have had some connection with the schools of the Continent. Many admirable qualities appear in these figures, though none of them show either the

artistic power, or the beauties of form and execution, which are characteristic of the Gothic sculpture of France. Unlike that, the sculpture at Wells has little relation to the building itself. It is nowhere an integral part of the architectural scheme. It does not naturally emboss the structural forms. The jambs, archivolt, and set-offs of the buttresses are everywhere crowded with niches, canopies, and panellings for its protection and display. The façade seems to exist for the sake of the sculpture, being, as we have seen (p. 230), little more than a vast screen, with no logical connection with the building behind it. As if to enlarge the space for the sculpture the doorways are reduced in size to even less than the usual dimensions of doorways in England. The springing of the archivolt of the central portal is below the level of the base mouldings of the wall, and the capitals of the jambs are within reach of the hand. Every relation of ornament to structure, such as is peculiar to true Gothic architecture, is disregarded.

Yet the sculpture itself is both grand and impressive, and much of it has considerable beauty. In grace and sentiment it is indeed inferior to the sculpture of the Ile-de-France; and it also exhibits less of those classic elements of design which we have noticed in the works of the best Gothic carvers. Its sculptors appear to have been more independent of tradition, and their work is correspondingly wanting in some of those finer characteristics which seem to depend largely upon traditional culture. But, on the other hand, a sense of nature seems to have had a large place in the mind of the artists; while, at the same time, they have kept well within the bounds of monumental art in the treatment of forms. The so-called statue of Christiana (Fig. 237) is a good example of their work. It is



FIG. 236. — Lincoln.

grandly architectural in its severe lines ; but the draperies, while showing a strong sense of reality, are singularly primitive in character. Little of the rhythmical beauty of contemporaneous French works, like the statue of the Virgin in the doorway of the north transept of the Cathedral of Paris (Fig. 221, p. 378) appears here. The treatment of the folds is almost as archaic as that of the statues of St. Denis and Chartres, which are a century earlier in date. But in comparison with such works as these this drapery shows the inspiration of reality in a more marked degree, though it is not without evidence of traditional influence, which in this figure appears in the zigzag edges of the folds beneath the right arm. The stiff and awkward forms of this right arm and hand are singular archaisms for work of so advanced a period as the middle of the thirteenth century. Yet for simplicity, veracity, and monumental grandeur this sculpture must be ranked high among the artistic achievements of the Middle Ages. It is vigorous and noble art, though wanting in the ideal refinement and beauty of the contemporaneous French work.<sup>1</sup>

Perhaps the sculpture in England next in importance to that of Wells is found in the reliefs of the Presbytery

FIG. 237. — Wells.

superior to any others known of the same period in any part of Europe." Such exaggerated overestimates of native works have hitherto done much to prevent the growth in England of an enlightened appreciation of the best artistic products of the Middle Ages.

(named, from the subject of these works, the Angel Choir) of Lincoln, which date from the second half of the thirteenth century. The position of this sculpture on the spandrels of the triforium is exceptional. It is so high above the pavement that it can be seen with difficulty, both because of its distance from the eye and because the width of the aisle is not sufficient to allow it to be viewed otherwise than very obliquely. The light, too, is unfavourable, since it falls directly from the opposite clerestory. A good light for sculpture, and for relief sculpture especially, is that which falls either from above, casting shadows downward, or from one side, throwing shadows to the right or left. This full front light on the reliefs of the Angel Choir reduces the shadows to a minimum, and destroys the effect of all delicate modelling. It is true that some side light also falls in from the great eastern window; but the modellings that might thus otherwise be brought out by this light are largely neutralized by the stronger clerestory lights. This sculpture has no considerable merit, though it has been extravagantly praised.<sup>1</sup> It consists of a series of figures of angels in high relief, with wings spread so as to fill the spandrels, playing on musical instruments. Some of them appear to be symbolical, but their meaning is uncertain. The work is that of a mature school, the forms have some grace, and are well modelled; but they exhibit no conspicuous qualities which should entitle them to high rank as works of art. The south door of this presbytery, which has more of the character of a French Gothic doorway than is common in England, has in its tympanum more effective sculpture, though it is too much mutilated to admit of a satisfactory judgment of its original merits. Among the statues placed against the buttresses of the same choir, those of Edward I and Eleanor his queen are noticeable for graceful composition and appropriate monumental character. But these, like the reliefs of the interior and of the tympanum of the south portal, are works of a late period, when the vigour and inspiration of mediæval art were largely spent. I am not aware that there is much other architectural sculpture

<sup>1</sup> Mr. Cockerell, in the Appendix to his *Monograph on the Sculpture of Wells*, says: "The sculpture of the Angel Choir is displayed with most admired learning and taste, and may not only challenge, in these respects, the works of sculpture or painting of any country in the thirteenth or succeeding century, but will possibly be found to establish a priority of merit in the English school, hitherto little suspected."

of importance in England dating from the thirteenth century. It is possible that a careful search might discover some other works of equal, or even superior, merits; the number must, however, be relatively small. Of the statues which once adorned the west front of Lichfield, not one remains, while those which occupy the niches high up in the spandrels and gables of Peterborough are too far out of sight to be judged of.

The rare employment of figure sculpture in connection with architecture, and the character of such sculpture as occurs, show that there were not in England, in the Middle Ages, any native schools of sculpture comparable to those which arose in France in connection with the development of Gothic architecture. The Anglo-Norman and English workmen, as we have already had occasion to note, were not, as a rule, such highly gifted artists as were the great monumental sculptors of the Ile-de-France.

The same lack of vigorous and original artistic gifts is manifest in the foliate carving that was produced in England during the twelfth and thirteenth centuries. While examples of great beauty sometimes occur, there was little in the early English pointed architecture of that growth of beautiful conventional types of foliation inspired by nature which so strongly marked the early Gothic carving of France. In many instances the influence of nature is, indeed, apparent; but a spontaneous and general movement in carving characterized by a consistent, varied, and skilful adaptation of natural organic forms leading to a new and living style of ornament, hardly had place in England. The early types of foliation which occur are conventionalized in a very different way from that in which the contemporaneous French types are conventionalized. Anglo-Norman art has what may be called an artificially conventional character; it manifests a lack of sensitiveness to those finer characteristics of nature which may be effectively expressed in monumental art. Traditional elements, such as were common to the whole of Europe in the twelfth century, were retained with less progressive modification than they received in France. A carved lintel, built into the wall of the north transept of Southwell, exhibits an imbricated design with conventional suggestions of foliation (Fig. 238) which will be recognized as agreeing in character with the leafage most frequently

met with in so-called early English ornamentation. Of such traditional elements the Anglo-Norman designers made varied use; but such invention as they exercised never quite eliminated their artificial character. The so-called stiff-leaved foliage of the early times gives little evidence of a refined artistic sense modifying the traditional conventions.

It is noticeable that the earliest foliate sculpture in England is the best, and among the finest examples are those of the capitals of Bishop Hugh's choir and transept at Lincoln. Of these none are better than those of the triforium. Yet notwithstanding their beauty, the trefoil leafage with which they are



FIG. 238.

adorned shows some of those peculiarities which I have characterized as artificial. In the capital, Fig. 186, it will be noticed, for instance, that the mid-rib is a flat-sided, sharp-edged member, and that the edges of the leaflets are also sharp and hard. These peculiarities will be more clearly apparent in Fig. 239, where C is the form of the section through AB. This fillet-like treatment of leaf ribs, leaf stalks, and leaf edges is highly unpleasing to the eye of a beholder who is familiar with the delicate rounding of such details in the sculpture of France; yet, in contrast with the circular abacus and the rounded profiles of England, it sometimes has a good effect. In itself, however, it is an ugly convention. The power of conventionalizing natural forms without needlessly violating their character, the Anglo-Norman ornamentist did not possess in a high degree. I must not, however,



seem to affirm that the foliate sculpture of the early pointed architecture of England was altogether devoid of such expression of the beauty of nature as is compatible with the proper conventions of ornamental art. In the earliest times it had a great deal of such expression. The leafage of the capital we have just referred to is, notwithstanding the artificial peculiarities which I have criticised, very exquisite in expression of the vigour of growth in living vegetation, and of the graceful leaf outlines

which had charmed the eye of the designer. The manner, too, in which these leaf forms follow each other around the bell, bending with pliant grace against the moulding of the abacus, is worthy of all praise. There are numerous other beautiful varieties of conventional leafage to be found on the capitals of the early choir and transept of Lincoln, and in many of them an equally fine feeling for nature is manifest. But this feeling does not long survive in the art schools of England, and its expression is never wholly unimpaired by the artificial peculiarities just noticed.

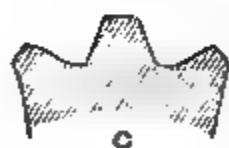


FIG. 239.

After the first quarter of the thirteenth century, the artificial characteristics become more conspicuous, and the expression of beauty caught from nature is less apparent. A good illustration of this later phase

of design is afforded by the leafage of the capitals of the triforium of the nave of the same building (Fig. 240). Here the leafage takes the form of crockets, which, as we have already seen, p. 338, have little propriety in connection with the round abacus. Its lines are still in a measure graceful and suggestive of the energy of vegetable growth; but the fillet-like ribs are unpleasantly multiplied, and the leaf stalks, instead of dying away in the mass of the bell,—as in the early capital of the east transept,—remain salient and flat-

sided down to the neck moulding. Of the fine surface flexures shown in the earlier work there is scarcely any trace in this artificial foliage of the nave.

In the interior of Wells Cathedral foliate sculpture (Fig. 191, p. 344) of exceptional character and peculiar beauty occurs. Here we have apparently a mingling of Anglo-Norman and French

FIG. 240. — Lincoln.

influences. The excessive projection of the crockets would seem to be Anglo-Norman, while the fine surface modelling and the delicate rounding of the leaf stalks and leaf ribs is French. The fine arrangement of the masses and composition of the curves, and the graceful, flowing, and vital lines, give these capitals remarkable beauty, though the extravagant salience of their crockets injures their architectural expressiveness.

The carving of imaginary and grotesque creatures, though

by no means without examples in England, was, like other sculpture, less general than in France. Nevertheless, instances occur which show that a lively fancy and vigorous executive skill were often exercised in their production. Among the best carvings of this kind were, apparently, those of buttresses of Bishop Hugh's choir of Lincoln. They have, however, been sadly worn by time and damaged by mutilation, so that little now remains of them.

On the whole, sculptured enrichment in the pointed architecture of England presents no parallel whatever to that of France. To the builders of the island sculpture was not felt to be an indispensable element of design. Many of their most important monuments are almost entirely devoid of it. Beverley, Salisbury, and Westminster Abbey, for instance, are singularly bald in this respect. The naked moulded capital, which almost exclusively prevails throughout the interiors of these and many other great churches, gives a painfully monotonous effect; and the few isolated statues and reliefs which occur on the outsides have little influence on the general aspect, or little beauty or impressiveness when viewed in detail. The great Gothic edifice of France, with its marvellous wealth of sculpture, never had any counterpart in England.

While there was a good deal of activity in the production of sculpture in Germany during the early Middle Ages, it appears to have been confined for the most part to works on a small scale, such as reliefs on pulpits and other ecclesiastical furniture, and to the enrichment of small architectural members. Monumental figure sculpture, as an architectural adjunct, was rare in the country before the thirteenth century, and was not extensively produced at any time. A range of statues seldom flanks the portals, or extends across the façades, of German churches. Such figure sculpture as sometimes occurs in these situations has a strong resemblance to the later Gothic sculpture of France, though it often, at the same time, bears a distinctly German stamp. Among the most exceptional, and among the finest, German fronts enriched by statuary is that of the Liebfrauenkirche of Trier. The portal here, though round arched, presents, at first glance, a very Gothic aspect with its archivolt of six orders crowded with statuettes, its tympanum carved in

relief, and its splayed jambs adorned with figures in the full round. This sculpture is designed and executed with grace and skill, and may compare favourably with contemporaneous carving in France, such as that of the portals of the transepts of Chartres. It lacks, however, the supreme expressional and monumental qualities of the best French work, and its relationship to the architecture is less perfect. The statues of this portal are not placed each against a shaft in the jamb, as in a French portal of the best period, but are set in niche-like compartments which gives them a more independent character. The severity of pose and of treatment which marks the finest architectural statuary is to some extent wanting here. This independent and over-free treatment is still more marked in the figures of the upper parts of this façade, which, instead of being ranged in grand subordination to the architectural lines, are put upon pedestals and corbels so as to have comparatively little architectural relationship and expression. The magnificent breadth of the total structural and ornamental scheme of a great French Gothic façade could never be attained on the principle here followed. The famous statues of Strasburg exhibit the same characteristics in an even more marked degree. They were evidently inspired by the sculptures of Reims; but in disregard of monumental restraints they exceed anything to be found at Reims. These figures show a somewhat mincing and sentimental character and; also, a degree of realism in the treatment of drapery which became a marked quality of the later German sculpture so fully exemplified in the admirable, though not monumental, works of Adam Kraft and Peter Vischer.

The distinctly German types of foliate sculpture were, like those of the human figure, of late development. They are characterized by a more or less elaborately crinkled treatment of leafage; and they suggest, as do the later types of leaf ornament in France, the dried foliage of autumn rather than the broadly undulating leaf forms of summer-time. Characteristic examples occur in the crockets of the gables, and in the string-courses of Cologne cathedral, as well as in the capitals of the same building. The over-naturalism which belongs to the late foliate sculpture of France reappears here with increased emphasis. In capitals all expression of unity with the bell, or of sympathy

with its functional office, is wanting, as in Fig. 207. p. 354. The architectural expression and appropriateness of the early leafage, which was largely derived from the French models, is almost wholly wanting.

In Italy there was no figure sculpture of a distinctly native type before the time of Niccola Pisano about the middle of the thirteenth century; that is to say, not until considerably after the epoch of the most splendid development of Gothic sculpture in France. The vigorous carvings of the Lombard workmen never advanced beyond the rudeness of a primitive state, and were not native Italian products. The Italo-Byzantine carvings of the twelfth century give little promise of the great achievements which the early Renaissance was to produce. The reliefs of the portals of the Baptistery of Parma, dating from the close of this century, and kindred works which are numerous, have, indeed, much ornamental merit based on the common traditions of Byzantine and Roman art; but in expression or in form they show no special excellence. When the art of sculpture in Italy began to assume a native stamp, and to become important, it was, from the first, different in character from the transalpine Gothic sculpture. This difference is largely due to the fact that it was the product of individual sculptors working independently, rather than of schools or guilds. The name of the carver of almost every important statue or relief in Italy is known. To the great companies of workmen who in France wrought together for a common end — each one content to do his best work without thought of individual fame — there was, at this time, hardly any parallel in Italy. And being so much an individual product, the work of the Italian sculptor was naturally more independent of architectural connection than that of the Gothic sculptor in France. That intimate union of sculpture with architecture, which was so constant in Gothic art, was never attained south of the Alps. The Italian regarded sculpture as something to be admired by itself, rather than as an architectural auxiliary. Thus it is that in Italy statues, instead of being ranged in broad lines subordinated to the architectural scheme, and connected with structural members, are commonly placed in isolated positions. They are set in niches, or under ornamental canopies which have not, as Gothic canopies have, any constructive function or expression, as in the façade of the Spina Chapel at Pisa.

Reliefs are not, as in Gothic, confined to the tympanums of portals, but are carved often on broad wall surfaces, as at Orvieto and in the Campanile of Florence. Thus, though effectively placed for its own display, sculpture in Italy never became associated with the structural system in such a way as to form an apparently integral part of it.

In Italian sculpture two elements curiously mingle: the one, that of expression, in which there is a resemblance to the northern Gothic; and the other pertaining to form marked by characteristics derived from the study of the Roman antique. Of these two elements sometimes one and sometimes the other predominates, according to the individual genius of the artist. For instance, in the famous sculptures of the pulpit of the Baptistery of Pisa, by Niccola Pisano, the inspiration of Greco-Roman models is clearly manifest in the treatment of forms, while of expression there is little. In the art of Niccola the spirit of the classic revival is already manifest, and the Gothic spirit is, for the most part, wanting. The figure of the vigorous young athlete, carved on one of the angles of this pulpit, exhibits, in its pose and anatomical modelling, a purely classic influence which is far removed from Gothic feeling. And it is worthy of notice that the classic character of this work differs fundamentally from the classic character discernible in Gothic sculpture. In the one case it results from direct imitation of ancient models, in the other it seems to have been, as already pointed out (p. 375), a traditional survival. The principles of ancient art may have been less familiar through tradition to Niccola than to the Gothic carvers; but these works at Pisa were wrought not so much under the guidance of tradition, as in conscious emulation, and with direct imitation of models which he had seen and admired. A passion for excellence of form, as displayed in these models, was apparently the ruling impulse with him. In the reliefs of the panels the characteristics of that Greco-Roman art which had stirred his ambition is no less strongly marked than in the figure just mentioned. In the grouping and execution of these reliefs the sculptor has given us little of his own. He has followed his models closely, even to the peculiar conventions of treatment in draperies and other details. The redundance and artificiality of Greco-Roman design are reproduced with curious exactness. It is not at all strange that the ancient models which

he had at hand for study should have stimulated his genius. In comparison with the contemporary works of art in Italy, the carvings of the ancient sarcophagi in the Pisan Campo Santo, and other kindred works in Pisa, exhibit great superiority of form. But it seems remarkable that a temperament so quick to appreciate excellence of form should have shown so little feeling for that beauty of expression which is a distinctive quality of mediæval art, first in France and afterwards in Italy. One looks in vain, in these reliefs by Niccola Pisano, for those refinements of expression and treatment which mark the works of his immediate successors. It is mainly in the rendering of animal life—in the carving of the beasts which support the pillars of the pulpit—that a living and original faculty is largely manifest.

Few other early Italian sculptors were so strongly influenced by Roman art. The reliefs of Giovanni Pisano at Orvieto are very different from those of Niccola at Pisa. In expression and in types of form they are more like Gothic works. A strong influence of nature and a fine sense of beauty are apparent in them; and they exhibit little evidence of direct reference to ancient models. The same may be said of the carvings in the panels of the Campanile in Florence, attributed to Giotto and Andrea Pisano. These reliefs differ a good deal in merit one from another; but many of them are of great beauty. The influence of French art was by this time considerable, and these reliefs show it in a marked degree; yet though a hundred years later in date than the reliefs of the portal of the Virgin of the Cathedral of Paris, they do not surpass, and few of them equal, the works of the French carver of that portal.

Of foliate sculpture, Italy produced little that was original and peculiar during the thirteenth century. The Roman and Byzantine types of leafage survived except where, as in the capitals of the pulpit of the Baptistery of Pisa, French Gothic models were largely followed. In the fourteenth century, however, distinctive Italian types of leafage were developed, which are often remarkable for delicacy and beauty, but which have as little Gothic character as the pointed buildings themselves with which they are associated. The leaf sculpture of the door jambs of the Cathedral of Florence affords specimens of the best work of this kind. The first noticeable and distinguishing

characteristic of it is that it is distinctly surface sculpture, a kind of rich chasing of the mouldings and narrow panels of the doorway. The manner in which the undulating surfaces of these mouldings are followed by the exquisitely outlined and delicately modelled leafage is remarkable. The bossy character of Gothic ornamentation is wholly absent. The next peculiarity which we notice is that of extremely naturalistic elaboration. The fig, the oak, and the ivy are wrought in the fine marble with almost complete botanical perfection. The power of monumental abstraction, together with a fine suggestion of nature, was never reached by the Italian ornamentists. A proneness to close imitation, where nature itself supplies the motives for ornamental elements, is constant with them. And their natural propensity for such imitation is still more fully manifest in the time of the early Renaissance in such works as the ornamental borders of the Ghiberti gates in Florence.

Perhaps the finest foliate sculpture that Italy ever produced is that of the older capitals of the Ducal Palace in Venice. This sculpture has a degree of architectural character which is rare outside of France; and it is remarkable for beauty of line and surface, caught from nature itself, without any over-naturalism.

There was no important native development of sculpture in Spain during the Middle Ages. The statues which adorn some of the Gothic edifices in that country are, like the architecture itself, of essentially French character, if not of French workmanship. But the employment of statues was not general, even in the greater Gothic buildings. The façade of the Cathedral of Burgos, for instance, has no figure sculpture whatever. The portals of the west façade of St. Vincent of Avilla are, however, enriched with statues, dating apparently from the latter part of the twelfth century, which are thoroughly architectural in expression. They compare favourably with the best sculptures of the same epoch in France, and show similar archaisms and the same meritorious qualities. Two statues on either side of the portal of St. Martin of Segovia have much the same character and are equally architectural in design and connection with the building; but they are rather less fine in form. Of more advanced sculpture the portals or the transept of the Cathedral of Burgos furnish examples. These correspond to later Gothic work in France, but they are not so architectural,



and they are placed between the shafts of the jambs, rather than against them. The tympanum sculptures of this portal are in very high relief, and neither they nor the statues of the jambs show any conspicuously fine qualities. Statues of a good late Gothic type occur also in the portal of the Church of St. Esteban of Burgos, and a rich assemblage of still more advanced and more elaborate figures occurs in the portals of the west front of Leon Cathedral. These are lacking in monumental severity, though as independent sculptures they have the qualities of corresponding works in France. The reliefs of the tympanums of Leon have much merit as architectural enrichments.

Foliate sculpture in Spain is no more original or important than that of the figure. The capitals and string-courses of the Gothic buildings exhibit, for the most part, French motives with little modification. The conventional leafage of the cornice of the choir of Burgos, for instance, might have been taken directly from Paris or Amiens, as might also those of the capitals and bases which adorn the angles of the buttresses.

## CHAPTER XV

### GOTHIC PAINTING AND STAINED GLASS IN FRANCE

THOUGH colours were employed on many parts of the Gothic building, enlivening sculpture and relieving plain surfaces with various ornamental patterns, the art of figure painting found less scope in Gothic art than it had in connection with the architecture of those parts of Gaul which lay outside of the region of the Gothic movement. This, as before remarked (p. 22), was a natural consequence of the Gothic structural system, in which extensive wall surfaces, inviting the exercise of the painter's art, did not exist.

Yet on such restricted wall spaces as there were figure painting was more or less practised in the Ile-de-France; and some notice of this painting is therefore necessary to complete our study of the Gothic style. Unhappily, no examples of wall painting in Gothic buildings have survived in good condition; and such scanty and mutilated remains as do exist (in the transept of Noyon, and in the wall arcades of the Sainte Chapelle at Paris, for instance) are insufficient to afford a clear understanding of their original character. But illuminated manuscripts of the Gothic period are extant in abundance and in excellent preservation; and from them, rather than from the almost obliterated examples of painting that are occasionally met with on the walls of churches, we may derive illustrations of Gothic art in this branch.

Mediaeval painting, as exhibited in these manuscripts, shows a very primitive state of pictorial development. Only the most elementary qualities of outline and colour are displayed, and the art is strictly ornamental, rather than realistic, in motive and in treatment. The drawing exhibits a curious mingling of archaic simplicity with great elegance of line. In delineation of the human figure, and expression of graceful gesture and movement, the French illuminators developed by the beginning

of the thirteenth century a degree of skill that was not attained in Italy until the century following. Yet joined with this skill the conventions of immaturity are everywhere conspicuous. The colours are laid in almost flat fields, though modellings are suggested by pale markings to indicate saliences, and by dark hatchings to express depressions; but there is never any indication of the direction from which the light falls, and no cast shadows. The natural creamy-white colour of the vellum stands for flesh, but cheeks and lips are slightly reddened. Features are drawn in with fine lines of brown or black, and a distinct

FIG. 241.

outline of the same describes every contour and every detail. In the twelfth century the outline is usually brown, and both figures and backgrounds are light in tone; while in the thirteenth century the outlines become black, and figures and backgrounds are more intense in hue. Usually in the thirteenth century the backgrounds are quite flat, and are generally either of an ultramarine blue or of a brownish red colour. In some cases, as in a manuscript of the *Life of St. Denis* (Fig. 241), dating from the middle of this century, figures are represented with no ground under their feet. No correct expression of different planes of distance occurs, and no perspective is at-

tempted. Where one figure has to be represented behind another, the farther one is but partially drawn, like the farther horse in this illustration, which is given without legs. The whole character of the work is thus essentially ornamental and conventional, rather than completely pictorial, yet it is often both tender in expression and beautiful in composition; and it rarely fails, in its various quarterings, to exhibit a fine harmony of mostly pure colour combinations.

This painting is, of course, based upon the traditional art that had, from the early Christian times, been cultivated in the monasteries of Europe. It has, however, a superior beauty which is altogether peculiar to Gothic art, though, unlike Gothic sculpture, it failed to develop beyond the most primitive technical conditions.

It was not in the field of painting proper, but in that of stained glass, that chromatic design, in Gothic architecture, where the great openings afforded ample space that was denied to wall-painting, reached its most splendid development. Though simpler forms of this art had been practised earlier, the fullest magnificence of stained glass is peculiar to the Gothic of the twelfth and thirteenth centuries.

The natural limitations of this mode of colour design are such as to confine the artist to the most abstract and conventional treatment. His material resources are those only which are afforded by sheets of glass coloured, in a molten state, by metallic oxides, cut up into bits and joined together by bars of lead and iron, and drawn upon with a pencil charged with a neutral pigment which is burnt in. It is plain that only a most conventional kind of art could be produced by such means. Yet by them the mediæval artist achieved results of consummate ornamental beauty.

The task of the designer in stained glass was, on the one hand, to subdue the light and give a comfortable sense of enclosure, and on the other to produce brilliant harmonies of translucent colours, and to add such pictorial interest as the conditions controlling his art would permit. The fundamental difference between this art and the art of painting on an opaque substance is, of course, that in the one case light passes through the design everywhere, while in the other it falls upon its surface only. This difference separates the two by an impassable

gulf. With the translucence of glass, and the structural lead lines, those effects of solid form and planes of distance, which are dependent upon a greater or less development of light and shade, are impossible. The Gothic workman appreciated this, and not only did not attempt to produce such effects, but evidently took pleasure in keeping well within the limitations of his materials and conditions. The true artist does this, of course, in every branch of art; but in no other branch are the proper limitations so narrow, and at no other time do we find the artist in stained glass so obedient to them. If he would preserve the translucent beauty of the glass, the colours which make up the design must be employed in a strictly heraldic manner. Hardly may the least gradation indicative of solid form occur, and the conventions of line are equally peculiar and imperative. For these lines are not outlines merely; they are the framework in which the bits of glass are set and held together. They are, therefore, necessarily coarse beyond any lines used in even the most conventional wall painting. Within the great lead lines the artist does, it is true, give with the pencil more or less delineation of the coarser details of his figures. By applying his neutral pigment either heavily or lightly, and by scratching out lights with the point of a sharpened stick, he can produce some rude suggestions of gradation and modelling; but this is usually not carried to the extent of destroying the general translucence of even the smallest bit of glass. In the general effect, at a distance from which the design can be seen as a whole, these details count for little: the chief impression received is one of jewel-like effulgence of colour. The conventions of the art ought not to be regarded as imperfections, for on them are the qualities dependent. And even the archaisms of figure drawing, which are not wholly the result of the material conditions, but are largely due to undeveloped graphic skill, accord so well with the unavoidable conventions that we can hardly conceive of their being changed with good effect.

The art of designing in stained glass would seem to be incapable of real development beyond the conditions that were reached in the Middle Ages. Modern attempts to give it a more complete pictorial character indicate an imperfect recognition of its inherent principles, and an imperfect appreciation

of the beauty of the mediæval art. The modern devices of fusing and overlaying have led the designer in stained glass out of the true path; and since the thirteenth century all manner of attempts have been made to give the art a character that does not properly belong to it.

Of the vast numbers of magnificent colour designs which filled the great openings of the Gothic churches of the twelfth and thirteenth centuries, very few are extant; but yet enough is preserved to show us fully what the art was. From the middle of the twelfth century we have some fragments in the apsidal chapels of the Church of St. Denis, while the Cathedral of Chartres retains, in almost perfect condition, many noble specimens dating from the latter part of the same century. Among these last is the well-known Jesse window, which may be taken as an example of the best work of the time, or of any time. Figure 242, a figure from this window, affords an illustration of its character, so far as the delineation of form is concerned. The design is produced, for the most part, out of pure pot-metal, while white glass is introduced here and there to heighten the effect in draperies and ornaments.

FIG. 242.

Each piece of glass is of one colour, so that where colour changes new pieces have to be inserted; and each separate piece is encompassed by its sustaining framework of lead. On various parts of the design thus made up, as in a mosaic, of many small fragments, the necessary details are, as before remarked, drawn with a pencil

charged with neutral pigment. The figures in this period are small, rarely more than two or three feet high, and often very much smaller, the separate pieces of glass hardly ever exceeding six inches in greatest dimension.

The Cathedral of Chartres is unique among extant Gothic buildings in its wealth of mediæval glass, nearly all of the original work of the twelfth and thirteenth centuries remaining in place and in good condition. Though a fragile form of art, stained glass is, if undisturbed by accident or violence, one of the most permanent. But unhappily, by both accident and violence, the greater number of extant Gothic monuments have been more or less completely despoiled of their ancient glass; and their interiors, in consequence, present to-day a very different aspect from that which they originally had.

Of the glass of the thirteenth century some fine specimens still exist in Paris, Reims, Bourges, and elsewhere. The Cathedral of Paris retains the splendid glass of its three great roses — those of the transept and that of the west end — practically intact; while the glass of the Sainte Chapelle, though much mended, still fills every opening. The heraldic treatment remains as absolute as in the earlier work; but it is noticeable that the fields of colour are never absolutely flat. Nearly everywhere there is some gradation, and in some cases there is considerable. This, however, is not gradation indicative of solid form; it has nothing whatever to do with the form. It is due to inequality of thickness and accidental unevenness of colour in the pot-metal. This unevenness of colour, which is a natural quality of the old glass, adds a charm which no glass wrought with mechanical perfection can have.

## CHAPTER XVI

### PAINTING AND STAINED GLASS IN ENGLAND AND OTHER COUNTRIES

ALTHOUGH during the twelfth and early thirteenth centuries the art of painting on the walls of churches, and of otherwise colouring architecture, was extensively practised in all of the countries of Europe, yet there was nothing in other countries of essentially different character from that which was produced in France. The tenderness of sentiment and the elegance of design which give charm to the works of French genius were not, indeed, equalled in those of other countries; but in general principles the art was the same all over Europe until the close of the thirteenth century, when, in Italy, the great movement set in which ultimately led, in that country, to the highest development of painting. The earliest pictorial art of Italy was posterior to the epoch of strictly Gothic building in the North. But as it was associated with the Italian pointed architecture its early phases properly form a part of our subject.

Italian painting exhibits from the first<sup>1</sup> technical qualities which are hardly met with in the same degree of advancement in the Gothic of the North. Though the outline remains distinct, it is less prominent than in France, and the elements of chiaroscuro and perspective, though but slightly and imperfectly suggested, are nevertheless present. A more advanced pictorial conception and treatment are everywhere manifest. The character of illumination is still strongly marked, but the elements of distinctively pictorial art are equally so. The art of Cimabue, at the close of the thirteenth century, shows an improvement upon the severe conventions of French Gothic painting in the fuller gradations and delicate modellings which give a faint touch of reality to flesh and draperies; while in the works of Giotto, in the early part of the century following, we

<sup>1</sup> From the first of the distinctively Italian art, the Greco-Roman and Italo-Byzantine arts which were practised in Italy during the early Middle Ages are not here referred to.



get, together with the higher qualities of the creative imagination, a technical advance which materially changed the character of the art, and gave it a start in the direction of pictorial realism.

The earliest examples of Italian mediæval wall painting, and almost the only ones which have any real connection with our subject, are those of the Church of St. Francis of Assisi, of Sta. Croce of Florence, and of a few other contemporaneous monuments. Though of the Italian pointed style, the architecture of these buildings is, as we have seen, essentially different from the Gothic. In place of great openings and slender supports we have here large flat wall areas and small openings. The interiors of such buildings would be bald in the extreme without colour illumination. These wall expanses, and the absence of great fields of brilliantly coloured glass in trying competition with the quiet tones of fresco, gave the most favourable conditions for the exercise of the mural painter's art. But, unlike the modern painter on small movable canvases, the mediæval Italian, called to paint upon the walls of churches, had constantly forced upon his mind the monumental purpose of his art — an habitual sense of which naturally develops the grandest qualities of painting. This led him to regard his wall space primarily as a field to be embellished with colour; and although he had both a pictorial and a didactic purpose as well, he rightly felt that everything else must be based upon a pleasing ornamental scheme. His panel had to be divided into spaces of colours so related to each other as to produce a harmony of total effect. Upon this basis a Scriptural story, or a religious legend, had, at the same time, to be set forth with as much truth to nature as the primitive artist could command. But with all his effort to be natural he worked as an artist, instinctively feeling that the primary function of a work of art is to set forth beauty; and the beauty which he sought to display was embodied in the mediæval Christian ideals. He strove to give an appearance of reality to these ideals, not merely to reproduce nature. Since, however, an appearance of reality could be secured through a resemblance to nature only, such resemblance he faithfully sought to attain as far as the monumental conditions under which he worked would permit. His naturalism was necessarily of a limited and conventional kind, both on account of these conditions and because of his own executive incapacity. But it

was sufficient to give his work a very different character from the purely symbolic art of still earlier times. Modelling and perspective were both rendered as far as the artist's knowledge and skill would allow. This did no harm to his art, considered as pure decoration; for there is, in fact, no such complete incompatibility of naturalistic with monumental painting as is sometimes supposed.<sup>1</sup> So long as the artist preserves a general ornamental scheme, he may, in painting, go very far in the development of pictorial realism without harm to monumental effectiveness. The frescos of Giotto and his followers exhibit, however, no realism in the modern sense; they are based on principles of abstraction which were imposed by the material conditions and executive limitations, as well as by the aims and ideals, of the time.

But this early Italian painting, though an appropriate embellishment of the walls of pointed buildings in Italy, and having a good deal in common with the spirit of Gothic, was but the beginning of a great school of art which had no relation to Gothic, and the discussion of which would therefore be foreign to our present subject.

In stained glass there were no peculiar styles either in England, Germany, Italy, or Spain. The use which in Romanesque times had everywhere been made of this mode of filling apertures continued in each of these countries during the Gothic period. In many cases fine examples of Gothic glass design were executed, especially in England and Germany. But the art was mainly dependent on France.

<sup>1</sup> I think that M. Viollet-le-Duc, in his article *Peinture*, errs in maintaining that the principles of pictorial art are necessarily and completely opposed to the principles of ornamental art. He refers to the works of the ancient Egyptians and Persians as illustrating the true principles of ornamental art, and to the works of Titian and Rembrandt as illustrating those of pictorial art, and argues that the qualities of the one are incompatible with those of the other. This is an extreme comparison, but the principle for which he contends is, nevertheless, not supported by it. The author fails to see that even the art of Titian is based upon a general ornamental scheme of lines, masses, and colours, no less strictly than the most abstract art of the Egyptians and Persians, from which it is, in fact, through a long series of intermediate developments, derived; and that so long as this ornamental scheme governs the composition, a work of art may be very far advanced in pictorial character without losing in ornamental and monumental effectiveness and propriety.

The art of Rembrandt is different. He, though a great master of expression, was one of the founders of that modern picturesque realism which is largely independent of ornamental qualities.

## CHAPTER XVII

### CONCLUDING SUMMARY

THE foregoing examination and comparison of the pointed architectures of the different countries of Europe will be seen, I think, to afford a serviceable, though it be not an exhaustive, illustration of the peculiar nature of Gothic architecture, and to throw light upon its origin. The true nature of this architecture has not, hitherto, been generally understood, because its distinctive characteristics have not been clearly recognized; and it has not been seen that its essential features were not independent or arbitrary inventions, but were based on principles gradually deduced from practice, and determined by the laws of mechanics governing the structure, as well as by a finely creative artistic sense. Our examination of these principles, as embodied in surviving monuments, reveals the existence of a great class of buildings which display a perfectly distinctive character, and which are confined, for the most part, to one closely circumscribed region. In this region a logical growth, from the earliest germs, of the principles of Gothic art may still be traced. Elsewhere we find buildings, in all cases later in date of erection, which exhibit many apparently kindred features, but which, in hardly a single instance, completely display in their structure the same distinctive system, and in many cases do not display it at all. In France, and in France alone, is the system complete and the development apparent. There only are the successive steps of change spontaneous and connected, and there alone does the inventive spirit of the builders manifest itself as animated by a general movement.

And what the monuments themselves show, is borne out by what might be fairly inferred from our knowledge of the respective conditions of the different countries in the twelfth and thirteenth centuries. In France, as I have before remarked, the ethnological constitution of the people was such as to render them the most artistic race of Northern Europe,

while their social and political conditions were most favourable to artistic production of a monumental kind. The force of natural aptitude, the spirit of communal independence, of national unity, and of religious zeal, were all highly conducive to the fruitful exercise of the native artistic powers. The general superiority of the French, at this time, in institutions and in letters, has long been recognized. It is but natural that they should have been superior also in the fine arts.

In England, at this epoch, the conditions were very different. Prior to the Norman Conquest no architecture of importance had been developed in the island, though the rudiments of a style existed which might, perhaps, in time, have grown into importance. By the Conquest the progress of this art was naturally checked; and all native activity in building was for a long time held in abeyance by the fact that the conquerors placed a prelate or an abbot of their own race at the head of nearly every diocese and monastery. No admixture of foreign blood had given to the English people what their Teutonic nature lacked in the direction of artistic aptitudes. The Norman infusion at length did much; but the Norman race was itself too near of kin to introduce such new elements as would have been required for a fresh and original development of art.

After the oppression of the conquerors had in a measure ceased, and the fusion of the two races had so far progressed as to remove the old distinctions between Normans and Englishmen, and produce somewhat of common national feeling, the conditions for the growth of a national art were still far less auspicious than they were in France. No free communities like those of the Continent existed. The town had not, in England, the character and meaning that the Commune had in France. It was not, as in France, a great centre of independent life where the arts might naturally call out the enthusiastic activity of large bodies of men working in the municipal employ. Ecclesiastical corporations and private individuals alone, under the Crown, held in England the powers which in France were possessed by the Communes.<sup>1</sup> The cathedrals here did not generally spring up as central objects in active towns; they were placed often in remote places, and in connection with monastic houses. Salisbury, Wells, Peterborough, Worcester, Canter-

<sup>1</sup> Cf. *Freeman's Norman Conquest*, vol. v. chap. xxv.

bury, and many others remain to this day surrounded by little more than country villages; while even York and Lincoln cathedrals had a closer connection with the Bishops' sees than with the towns in which they are situated. The spirit of popular enthusiasm, of which the Abbot Haymon writes,<sup>1</sup> had no counterpart in England. Church building was here much more exclusively in charge of the clergy, regular and secular.<sup>2</sup> It is, in fact, one of the essential points of difference between the pointed architecture of England and the Gothic of France in the twelfth and thirteenth centuries that the former was largely an ecclesiastical, rather than a popular, development.

The native English activity in building, which was checked by the Conquest, did not remain wholly or permanently inactive. It was, however, natural that it should be strongly influenced by that of the foreign settlers, which was the result of a superior discipline and culture; but it had character and independence enough to react in turn. Hence the later Norman art of England assumed, at length, a character of its own. But the English influence affected only the ornamental features and details of the architecture; the art remained, in its structural principles and forms, essentially Norman. Even the advanced pointed monuments — the Cathedral of Salisbury, the nave and transept of Wells, and the Presbytery of Lincoln, among others — are, as we have seen, substantially Norman buildings. They differ from those of the earlier Norman style in little more than the substitution of pointed arches for round arches, and in the modification of mouldings and ornaments. This architecture cannot, therefore, be properly called English in the sense of being a purely native product: it is Anglo-Norman. And this is, of course, largely French, since the dominant artistic influence, under which both Normans and English worked at this time, was that of France.

<sup>1</sup> The well-known letter of the Abbot Haymon, of St. Pierre-sur-Dive, written in 1154, gives an impressive account of the religious ardour which actuated all classes of the people, and the material assistance which they voluntarily rendered towards the construction of the church edifice.

<sup>2</sup> Among the monks and the clergy there was, indeed, no lack of zeal in architectural construction. Bishop Hugh, of Lincoln, is said to have assisted with his own hands in the erection of his splendid choir, and records are numerous of other similar instances. But no general popular activity in connection with the building of churches, like that which prevailed in France, appears to have been called out.

"Macaulay," says Freeman,<sup>1</sup> "has truly remarked that the history of England for a considerable period after the Conquest is not English history at all, but French. It was not till the reign of Edward I, at the earliest, that our kings and nobles could be regarded as really our fellow-countrymen." And likewise it may be said that the architecture of England at the same epoch was not English architecture at all, but French. Of the two elements, English and Norman, which mainly constitute the English race, the English has, in the long run, proved the stronger; and it has, since the thirteenth century, held the ascendant in arts no less than in the institutions. The character, however, that architecture has assumed, since this ascendancy became active, is by no means so admirable as that which it had before. The perpendicular style, which alone since the Conquest is entitled to be called an English art,<sup>2</sup> is certainly neither Gothic nor at all comparable in merits to the architecture which it superseded.<sup>3</sup>

In Germany the conditions in the twelfth century were not more favourable to the formation of a style like the Gothic. The grand Romanesque architecture of the country was, in the main, a native style, and was well suited to the local conditions. The Germans showed little disposition to change radically this style, and they had little need to do so. The inventive genius of the people was less quick than that of the French; and no event, like the Norman Conquest of England, occurred to infuse foreign ideas and stimulate to new architectural departures. Under these circumstances the principles of building remained long unchanged; and when finally the Gothic of France began to exert an influence, it was rather through imitation, than through a new spirit of invention, that it was manifest.

Whatever may be thought of the pointed architecture of Italy, few persons have supposed that there was ever any original development of the Gothic style in that country. The large infusions of foreign blood, through the various incursions of the

<sup>1</sup> *Life*, vol. i. p. 126.

<sup>2</sup> "Every church I see convinces me more and more that this (the perpendicular) is our peculiarly English style." Freeman, *Life*, vol. i. p. 86.

<sup>3</sup> Even Rickman, *An Attempt to discriminate the Styles of Architecture in England*, p. 5, recognizes the decadent character of the perpendicular style.

Northern races, had been absorbed into purely Italian veins. Italian tastes, traditions, and needs were all favourable to the ancient forms of building, which were their own natural inheritance; and in the revival of the arts, after the stagnant period which followed the downfall of the ancient civilization, it was only natural that the Italians should show a predominant preference for them. The Italians of the Middle Ages were never constructive builders. The Romanesque of Italy (excepting always the semi-Teutonic Lombard-Romanesque) was not an organic and structurally progressive style. The Cathedral of Pisa, for instance, though subtle in its proportions, and beautiful in its details, is in construction, for the most part, like a Christian Roman basilica of the earliest times. Its superimposed arcades are without organic connection; and there is nothing in the system that could give rise to new structural developments. A comparison of Pisa with the nearly contemporaneous Abbaye-aux-Dames of Caen will show how widely the Italian Romanesque differs from that rudimentary organic system which contained the germs of the Gothic style.

There can certainly be no question with regard to an original development of Gothic art in Spain. The Christian civilization of the country was, from the time of the Moorish invasion, far too unsettled to admit of such a development, even had the artistic constitution of the race been favourable. Of all the nations of the West the Spanish, in the Middle Ages, were the least advanced in those conditions of political and social organization, and of intellectual and moral life, which favour the development of the fine arts.

It does not then from historical considerations, any more than from those which the buildings of the different countries themselves suggest, appear that Gothic architecture arose either in England, Germany, Italy, or Spain; but everything points clearly to France as the locality of its origin, and the only locality of its full and distinctive development.

And of the pure French Gothic of the twelfth century it is hardly too much to say that it is the most splendid architectural product that human genius and skill have thus far wrought in this world.

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DARTIEN, *Étude sur l'Architecture Lombarde*, 368.

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Dehio, *Die Kirchliche Baukunst des Abendlandes*, 240<sup>1</sup>, 242<sup>1</sup>, 245<sup>1</sup>.

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KING, *Handbook to the Cathedrals of England*, 211<sup>2</sup>.

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Le Clerc, *Discours sur l'État des Beaux-Arts*, 187<sup>1</sup>.

Lefèvre-Pontalis, Eug., *L'Architecture Religieuse dans l'Ancien Diocèse de Soissons*, 46<sup>2</sup>, 59<sup>1</sup>; *Étude sur la date de l'Église de Saint-Germer*, 64<sup>2</sup>; *Étude sur le Chœur de l'Église de Saint-Martin-des-Champs à Paris*, 70<sup>2</sup>, discussion on the introduction of alternate system of vaulting into Normandy, 46<sup>2</sup>; on groin arches of early Gothic vaults, 65<sup>1</sup>; on vaults of the ch. of Bury, 68<sup>2</sup>; on ch. of St. Germer-de-Fly, date, 71<sup>1</sup>, 102<sup>1</sup>; Gothic features, 79<sup>1</sup>; on date of cath. of Senlis, 87<sup>1</sup>.

Lenoir, *Architecture Monastique*, 27<sup>1</sup>.

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- Quintino, di S., *Dell' architettura italiana al tempo dei Longobardi*, 9<sup>1</sup>.
- RAMÉE, *Hist. Générale de l'Architecture*, 265<sup>2</sup>.
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- Ruprich-Robert, *L'Église Ste. Trinité et l'Église St. Étienne à Caen*, 13<sup>1</sup>, 49<sup>1</sup>; *L'Architecture Normande*, 45<sup>1</sup>; discussion in regard to introduction of alternate system of vaulting into Normandy, 46<sup>2</sup>.
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Scott, G. G., *History of English Church Architecture*, 5<sup>1</sup>.

Scott, Sir Gilbert, on Gothic Architecture, 5; *Lectures on the Rise and Development of Mediæval Architecture*, 130<sup>2</sup>, 199<sup>1</sup>; on stiling of the clerestory arch, 133.

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